GAS JOURNAL

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EASTERN ASSOCIATION'S DIAMOND JUBILEE

THE Autumn Meeting of the Eastern Association of Gas Engineers and Managers last Friday marked the Association's Diamond Jubilee, for, although, owing to the exigencies of two wars and other causes, Mr. F. Allen is only the 55th President, it was at an autumn meeting just 60 years ago that the Association was inaugurated. Not for the first time the meeting was historic. Three-and-a-half years ago it was the Eastern Association that had the distinction of being the first to meet after the end of the European war—actually within 48 hours of the end of hostilities—and last week's meeting came just a week after the announcement in Parliament of the names of the 12 Area Gas Board Chairmen. Two of the new Chairmen—one the President of the Institution of Gas Engineers (Northern) and the other Mr. Henry Jones (East Midlands) were guests. Sir John Stephenson (Eastern), in whose area most of the members of the Association serve, was unable to attend. Both Mr. Crowther and Mr. Jones are gas engineers and administrators of ripe experience; Sir John has not yet intimate knowledge of the affairs of the industry.

It was, therefore, most appropriate that Mr. Crowther should submit to the Association a suggestion that a valuable purpose would be served both for the Area Boards and for themselves if the District Associations prepared memoranda setting out how, in their opinion, they could best assist the new owners in their responsibilities. Clearly some of the commercial activities of the District Associations will diminish, but most of their pre-occupations fall in line with those duties. Their technical and educational functions must and should expand. Such memoranda will be particularly useful in those areas in which the chairman is comparatively a newcomer; they will be scarcely less useful elsewhere, for even where the chairman is already familiar with the good work of the District Associations there will be other members of the Area Boards, as well as the members of the Consultative Councils, to whom much of the information will be a revelation.

DOMESTIC GAS SPACE HEATING

"IT must be agreed that, from the gas industry's point of view the unfavourable load factor is an objection to space heating, particularly the high peaks which occur in periods of unusually cold weather, and which, it might be anticipated, would be accentuated if space heating were further developed." This is taken from a first-class technical paper given by the Chief Physicist of the South Metropolitan Gas Company, Mr. G. H. Fuidge, to the London and Southern Junior Gas Association. The paper is published in the October issue of "GAS," and it will repay study. The author, having remarked that the winter space heating load is not a disadvantage in that a lower gas output in the summer facilitates repair and maintenance of gas-making plant, argued with justification that the more serious high peaks of short duration during cold spells are in large part due to the present-day use of gas appliances for occasional heating rather than basic heating, and that the proportionate height of the peaks would be less if gas were used to a greater extent for living-room heating and continuous heating generally, and less for occasional heating and "topping-up." The author's view is that there should be no disadvantage in the further development of the use of gas for living room heating, for whole house heating, or for other systems of heating which involve the use of appliances for the whole of the heating season. In fact, there would seem to be a case for the present functions of gas and solid fuel to be reversed, gas being used for the basic heating and solid fuel for "topping-up" heating, particularly in the cold spells.

In the South Metropolitan Gas Company's laboratories work has been in progress for a considerable time, having as its object improved heating comfort for the consumer coupled with a reasonably attractive load for the gas-making plant. The paper outlined part of this work, describing, first, experiments on the spatial distribution of heat from a gas fire. Tests brought out that, while the radiation from a gas fire is similar to that from a coal fire, there are large differences in the way in which the radiation emitted from the fires is distributed in space. This, it was concluded, was the main reason for the less satisfactory comfort conditions attributed to the gas fire. Elaborating a little, the maximum intensity of radiation from a coal fire is, generally speaking, at an angle of about 45°. A considerable proportion of the radiation can pass over the top of objects near the fire and reach the far walls of the room. Again, a person sitting in front of the fire has his legs much nearer than the upper part of the body, and the relatively small magnitude of the radiation in the horizontal direction enables him to do so without discomfort. By contrast, with a columnar radiant gas fire with vertical radiants, the maximum intensity of radiation is at a few degrees only above the horizontal, and with a flat fronted fire the radiation falls sharply towards the sides. Hence "leg scorching" and the fact that people sitting at the sides of the fire receive relatively little radiation. And the solution? Mr. Fuidge described in detail a gas fire of the fret principle developed by the Company. It is an inclined fire, and the maximum intensity of radiation is at an angle of 40° above the horizontal. Further, the side radiation was improved by making the fire "V" shape in plan so that the radiant surface was in two places set at an angle of 130°. Running cost, of course, enters into the matter. The "effective efficiency" of the fire showed improvement; the thermal efficiency was of the same order as that of a good columnar fire. Which, naturally, led to consideration of the convector fire and the addition of a convection component to the inclined fire; and the author concludes that "the convector fire is probably the better solution of the problem than the improved type of radiant fire, although the latter has its sphere of usefulness."

A further section of the paper dealt with background and whole-house heating, and it was rightly stressed that for gas

heating to compare in cost with solid fuel heating the gas must be used at a high efficiency. It was considered in tackling this phase of the problem that for continuous heating an appliance should be developed which did not discharge its products into the room. Justification for this line of approach was reinforced by circumstances, such as in large blocks of flats, where the provision of the normal type of flue in every room would present serious structural difficulties. Attention was, therefore, directed to a "balanced flue" heater, which Mr. Fuidge described and illustrated in detail. The principle has been known for many years; the work consisted in overcoming snags. An appliance on the principle has been designed in the South Metropolitan laboratories and has been tried out in a block of flats. It has not yet been produced commercially; further trials will be necessary before it can be said that all the technical problems associated with it have been solved. On the other hand, "the results so far obtained, taken in conjunction with work which is known to be in progress in other laboratories, make it perhaps not unjustifiable to claim that the balanced flue heater will be a useful addition to the space-heating appliances available to the gas industry."

COMBUSTION RESEARCH

THE field of investigation covered by the British Coal Utilization Research Association is wide, and many aspects of its work are of close interest to the gas industry. The work is, of course, on a national level and it concerns the future prosperity of the country. With this, as with many research bodies, however, the old adage "Out of sight, out of mind" applies. Research is being carried out energetically by B.C.U.R.A. on the efficient operation of shell boilers, the recently published report of which investigation is reviewed elsewhere in the issue. We wonder how many whose interests lie in the economical utilization of coal are even to-day aware of the five years of effort which have made possible this compilation. Maybe manufacturers tend to place more reliance on traditional design than is sometimes warranted in the light of current needs. All the more encouraging, therefore, to know that the particular investigation to which we refer has been carried out in full co-operation not only with the manufacturers but with the National Coal Board and the Ministry of Fuel and Power. The while—and this is important—the Association operates as a free agent, entitled to conduct its investigations and publish its findings in the manner it chooses—subject afterwards perhaps, but not before, to criticism.

Our recent visit to the new premises of B.C.U.R.A. at Leatherhead leaves us in no doubt that this is a research station which in its generous site, allowing for expansion, and its pleasant and serviceable laboratories and offices, may be expected to furnish a wealth of valuable information. The steam engineering laboratory described on p. 389 is unique of its kind and it is not surprising that other countries, notably the United States, are looking to Britain for guidance in such matters. This deference is likely to become more pronounced as work proceeds. The research objectives are both ambitious and far-reaching. The main objective during the current year will be to investigate the influence on burning rate and boiler efficiency of different fuel characteristics, including size, rank, volatile, moisture, and ash content, and caking index. In addition to the work done on the experimental boiler, parallel small-scale combustion research will be undertaken, using the same fuels. Alternative methods of assessing the value of a fuel, other than by combustion, are also being investigated, and by integrating the laboratory methods and technique developed in other departments of the Association with the work done in the shell boiler department it is hoped to present in due course a reasonably complete picture of the influence of each of the many variables. The extended use of mechanization in coal mining may result in 40% of all coal brought to the surface being marketed as 1 in. smalls, either washed or untreated. This coal, which contains all the fines and inert matter, and is suitable only for steam raising, sundry industrial purposes, and electricity generation, must be used efficiently and more must, therefore, be discovered about the amount of ash that can be tolerated without reducing boiler capacity and efficiency, the influence of fines, and the effect of volatile matter and moisture content. Six coals, differing in rank and chosen as reasonably covering the range of volatile content and caking index, will be tested with both a high and a low percentage of fines and ash, thus giving 24 variations in fuel characteristics. Further work will be carried out on grit emission, the effect on heat transfer of the shape, diameter, and length of smoke tubes, the influence of retarders, and the effect of scale and deposits. Another part of the programme likely to prove valuable is the evolution of a satisfactory steam calorimeter to replace the misleading sampling tube.

It will be gathered that in this department of the laboratories alone a course of investigation is being followed which may fundamentally influence shell boiler design and operation. It is hoped that similar reports from other sections of B.C.U.R.A. will become available in the near future. We feel that Dr. D. T. A. Townend, Director General, may well be proud of his staff, who, by combining individual aspiration with the spirit of team work, are providing a future co-ordinated fuel industry with a better conception of the economic utilization of coal.

FIELD'S ANALYSIS

FIELD'S Analysis has come to be regarded as a standard classic of the industry, and appreciation of its value as a work of reference has spread widely among successive generations of those responsible for the administration of the industry. A new edition, therefore, is always a noteworthy event and it is with pleasure that we announce the publication of the 1947 edition, a copy of which has just come to hand. We realize that, although we may expect a further edition next year covering 1948 working results, the publication in its present form will inevitably be discontinued for financial periods following the vesting date of the industry. We shall, however, wait with interest to see whether further fields of usefulness can be found for it in different form under the new régime.

The present issue contains the working results of company undertakings for the year ended Dec. 31, 1947, and for local authority undertakings for the year ended March 31, 1947. During these periods the rise in costs continued unchecked, and in consequence many undertakings have been forced to increase the price of gas. Nevertheless, the sale of gas almost everywhere showed substantial increases over 1946. These facts are fully illustrated in detail by the figures appearing in the Analysis; and we recommend it particularly to all those of our readers whose interest lies in facts and figures relating to the industry.

Our congratulations are once again extended to the compilers, Messrs. S. H. Collins and O. W. Wells, Joint Chief Accountants to the Gas Light and Coke Company, and their assistants for the able manner in which they have carried out what must always be a difficult job of work.

INSTITUTION PAPERETTES?

A suggestion which Mr. E. Crowther, President of the Institution of Gas Engineers, submitted in his speech to the Eastern Association of Gas Engineers and Managers last Friday is worthy of wider consideration. The numerical strength of the Institution membership and the highly technical nature of the papers presented inevitably result in a formal atmosphere at the annual meeting. Two or three years ago "Question Time" afforded some relief from that formality, but the fact remained that up and down the industry small discoveries are being made, and small improvements introduced in practice or organization, of

which the Institution either hears nothing at all, or does not hear until a long time afterwards. Such innovations are, in themselves, too small to justify a full-dress paper, yet they are too valuable to be hidden under a bushel. Mr. Crowther's suggestion is that in place of one of the papers a collection of anything up to 10 or 12 " paperettes " on such new departures, each occupying probably not more than five minutes, should be submitted at the annual meeting. Incidentally, informal communications of that kind would give the junior members an opportunity of trying their wings.

T.U.C. AND PRODUCTION

" The General Council appreciated the Government's responsibility in securing the widest realization of the facts of the situation, but so far as the part which the Council itself is to play they felt they had to pass from the stage of exhortation and decided to grapple with the fundamental difficulties in a practical way." This extract from a report made by the General Council of the T.U.C., which has been sent to all affiliated unions in preparation for the special conference of trade union executives to discuss ways of increasing the production of British industry, on Nov. 18, suggests that the policies of Sir Stafford Cripps have found ready disciples in the ranks of the T.U.C. " Tentative proposals " for a publicity campaign are said to have been put to the T.U.C. by the Government but the trade unions have decided to tackle problems more urgently than by issuing yet another set of posters. The report presents the problem under three main heads: to make sure that the facts of the economic situation are really understood by men and women in the factories; to provide training for trade union responsibilities in joint consultation and participation in nationalized industries; and to take direct action to deal with the technical problems of increasing productivity. Ruling out general publicity as ineffective, the T.U.C. has decided to make a start towards a more practical approach by calling special conferences of all the various trade union federations to discuss the problems in particular industries. There must, the report indicates, be more concern with production at executive level in the unions, and executives are told that they must pay more attention to productivity even if this means additional staff. But " no real improvements can accrue without the full co-operation of the workers concerned " and executives are to " consider and adopt the most appropriate methods whereby individual members can work with knowledge and efficiency." The T.U.C. is critical of the progress made in joint consultation and says that " Notwithstanding two years' effort and the introduction at two previous congresses of resolutions calling for compulsory joint production committees, the General Council are forced to the conclusion that over wide sections of industry these joint bodies are not being formed with the enthusiasm that congress resolutions would appear to indicate."

DEEP-MINED COAL

Though the over-all coal position remains fairly gloomy, there have during the year been a number of bright spots, periods when outside factors have not interfered too much with the work or attendance for work of the miners. One of these sunny periods came during the first week in November, when production of deep-mined coal was the highest since the miners turned out a national Christmas present last December. It amounted to 4,052,000 tons but was still 300,000 tons short of the weekly average which Lord Hyndley, Chairman of the National Coal Board, recently stated to be necessary if the 1948 target of 200 mill. tons was to be reached. Cumulative output of deep-mined coal for the 44 weeks of the year was 165,435,700 tons, compared with 156,365,000 for the corresponding period in 1947. To achieve the 1948 target output should have been 167,639,000 tons. The gap at the end of the week in question was 2,204,000 tons and was widened during the week by 271,300 tons. Over-all output per manshift during the week ended Oct. 30 was 1.14 tons for the second week in succession, compared with 1.12 during the corresponding week in the previous year. At the coal face it was 2.99 as against 2.96 last year.

THE MORE WE ARE TOGETHER

The much-discussed Anglo-American Joint Council on Productivity has started work, being sensibly launched by statements from its members that Anglo-American co-operation is no new thing, but worked well on many combined boards during the war. " We won the war together as partners, and now we are undertaking to win the peace," said Mr. Philip D. Reed, Chairman of the American side, adding that there was not the same singleness of object as there had been during the war, but the joint council was trying to solve peacetime problems in the same spirit of co-operation in which the wartime boards had worked. Although both Sir Frederick Bain, President of the Federation of British Industries, and Mr. Lincoln, who is Chairman of the British side of the trade union delegation, have given assurances that nothing would be barred from the discussions, the nationalized industries appear to have been left off the agenda. As there are no representatives of any nationalized industry on the British side of the Council, which represents solely the T.U.C., the Federation of British Industries, and the British Employers' Confederation, this question naturally came to the fore at a Press conference held after the first meeting of the Council on Oct. 25. Sir Norman Kipping, Director-General of the F.B.I., and one of the three joint secretaries of the Council, said that the meetings would be concerned mainly with " productivity " in an " industrial sense," and that transport and electricity were rather outside the scope of this. Coal was the only nationalized industry with the kind of problems which the Council would be discussing, but it had been decided to leave it out: it would try to study a representative cross-section of British industry. How a cross-section of industry which does not include coal could be representative is left unanswered by the statement that the Council would not have time to study everything, and it appears that the new organization has decided to skate where the political ice is not so thin.

"G. J." Calendar and Directory, 1949

Direct subscribers to the "JOURNAL" will be receiving their copies of the Calendar and Directory in the usual way at the end of this year, but we should like to remind subscribers who do not obtain their weekly copies direct from us that they should ask their bookseller or agent to apply for a copy of the "C. & D." on their behalf. Otherwise we have no means of getting the book to them.

Personal

Mr. E. C. LE JEUNE, M.S.E., M.Inst.Gas E., has been elected to full membership of the Société des Ingénieurs Civils de France—M.Soc.C.E. (France).

* * *

Mr. W. F. EDWARDS, Manager and Secretary of the Bridgend Gas Company, has been elected a Fellow of the Chartered Institute of Secretaries, having passed his final examination in May.

* * *

The resignation in October of Mr. W. J. PICKERING from the position of Superintendent of the Central Test Works of the Birmingham Gas Department brought to a close a long and notable career of service. Born in 1883, he joined the Birmingham Gas Department as Junior Chemist under the late Dr. W. B. Davidson in 1905. He held various appointment on the chemical staff of the Department up to the time of his promotion to Coal Test Works Superintendent in 1918 under Dr. (now Sir Ernest) Smith. In 1918 he was elected an Associate of the Institute of Chemistry, and in 1920 became a member of the Institution of Gas Engineers. In 1905 he was one of a number of keen young men in the Midlands who united to found the Midland Junior Gas Association, and from that date onwards Mr. Pickering has concerned himself with all matters connected with the education of the technical personnel of the industry. He was a lecturer in Gas Engineering at the Birmingham Central Technical College from 1916 to 1930. His interest in the Junior Associations culminated in his election to the Presidency of the Midland Association in 1920 and his appointment as Education Representative of the Joint Junior Associations on the Institution of Gas Engineers Education Committee in 1927.

Letters to the Editor

Organization of Gas Staffs

DEAR SIR,—In his Presidential Address to the Southern Association of Gas Engineers and Managers Mr. L. P. Ingram said he had found that gas engineers and their staffs had a common loyalty to the industry, whether they served in large or small company undertakings, municipal gas departments, or under holding company's control. There is a great deal of evidence to support that statement and the tendency of gas men to wish to get together to discuss their business affairs is well known.

For that reason, gas staffs decided to form their own Staff Associations some years ago in order that they could together discuss and negotiate conditions of service which would be related particularly to the gas industry and would be commensurate with the high standards of technical and other qualifications required in that industry. The British Gas Staff Association was, therefore, formed from the spontaneous desire for gas men to run their own affairs and the fact that it now has in membership over 14,000 gas staff employees is sure evidence of its success. The British Gas Staff Association is also much concerned with the efficiency of the industry in which all its members serve and is keen to co-operate in all ways to secure greater efficiency and, therefore, better service to the community.

I was, therefore, surprised to read Mr. Ingram's remarks to the effect that there had been several abortive attempts to form a national staff association and that the attempts had failed because the associations were largely composed of disgruntled members and because too much emphasis was placed on salary scales.

This Association is the only available association whose functions are limited to the one industry and whose membership is open to all non-manual staffs of that industry. In its ranks are found engineers, managers, secretaries, accountants, chemists, clerks, foremen, slot collectors, and a host of others, all of whom loyally serve the gas industry, and the majority of them are not disgruntled. Those who are have good reason for being so as they are employed in those undertakings which paid disgraceful salaries before this Association was able to assist in bringing about some degree of uniformity at a more reasonable level.

While accepting that there may be a need for separate negotiating machinery to deal with the conditions of service of senior executives at the highest level, I consider that there must be close co-operation between all staffs in the many matters of mutual interest, especially when we have a common employer.

Yours faithfully,
F. C. HENFREY-SMITH,
General Secretary,
British Gas Staff Association.

Albert Gate Mansions,
203, Knightsbridge,
S.W.7.
Nov. 5, 1948.

* * *

DEAR SIR,—I have read with no little concern, in the "JOURNAL" of Nov. 3, a report of the address by Mr. L. P. Ingram to the Southern Association of Gas Engineers and Managers, and would like to voice a repudiation of the statement regarding "abortive attempts to form a national staff association."

Ignorance is no longer excusable when prompted by failure to recognize facts, and without indulging in an all too common practice of "slanging one's adversary," I would respectfully point out to Mr. Ingram the existence of the British Gas Staff Association with a nation-wide sphere of operation, unashamed of its registration—along with many other professional bodies—as a trade union (unglorified).

Yours faithfully,
EDWARD WOOD,
London Regional Council Secretary,
British Gas Staff Association.

23, The Drive,
Wallington.
Nov. 5, 1948.

News in Brief

The North British Rubber Company moved to larger premises, at 52, Hill Street, Belfast, on Nov. 15. Telephone number is, as previously, 23924, and, as before, the warehouse will be controlled by Mr. J. W. Kyle.

Employees of the Coventry Works of George Wilson Gas Meters, Ltd., have held a series of competitions during the past four months, concluding with a fishing contest. The works have now won two of three fishing contests and a cricket match.

Trade Statistics for September issued by the Department of Industry and Commerce in Eire show imports of 31,667 tons of gas coal, valued at £140,674, as against 17,344 tons, valued at £48,476, in September, 1947. This brings the total of these imports for the first nine months of 1948 to 224,395 tons, valued at £983,228, compared with 90,447 tons, valued at £301,907, in the corresponding period of 1947.

A Rebuilding Programme involving contracts of £70,000 is well under way at the Wisbech Lighting Company's works although, because of the acute shortage of labour and materials, orders placed two-and-a-half years ago have only recently been started.

In Our Editorial Columns attention is drawn to the publication of the 1947 edition of Field's Analysis. This is on sale at the pre-war price of £2 2s., and orders should be sent to the publishers, Messrs. Eden Fisher & Co., Ltd., 95, Fenchurch Street, London, E.C.4.

One Thousand Schoolchildren and adults saw the new series of British Gas Council films between Oct. 25 and 29 at the showrooms of the Coventry Gas Department and at area halls used by women's organizations. Schoolchildren were asked to write essays on the films, and head teachers have expressed appreciation of the films.

"Britain in the Balance," an exhibition sponsored by the Ministry of Labour, the Central Office of Information, and the Textile Institute, was held recently in the Barnsley showroom of the Sheffield and District Gas Company. A special feature of the exhibition was that spinning and winding machines erected on the ground floor of the showrooms were being used to help the export drive by producing yarn in hank form.

Diary

Nov. 18.—**Midland Junior Gas Association:** Visit to Henry Wiggin & Co., Ltd., Birmingham, 4.30 p.m.

Nov. 19.—**London and Southern Junior Gas Association:** "The Production and Use of Film Strip as a Visual Aid in Training and the Presentation of Technical Papers," R. N. LeFevre; and "The Publication of Technical Papers," Clifford A. King. Gas Industry House, 7 p.m.

Nov. 23.—**Industrial Gas Development Committee:** Gas Industry House, 2.30 p.m.

Nov. 24-25.—**Institution of Gas Engineers:** 14th Autumn Research Meeting, London.

Nov. 30.—**Southern Association of Gas Engineers and Managers (Eastern District):** "The Place of Transport Service in the Gas Industry," H. M. Lawrence, Transport Manager, Gas Light and Coke Company. Gas Industry House, 2.30 p.m.

Dec. 1.—**Western Junior Gas Association:** "The Application of Electricity on Gas-Works," E. L. Evans (Lancashire Dynamo & Crypto, Ltd.). Weston-super-Mare, 3.45 p.m.; preceded by tour of inspection of Weston-super-Mare Gas-Works at 2.15 p.m.

Dec. 9.—**Midland Counties Coke Association:** Central Committee, King Edward House, New Street, Birmingham, 2.30 p.m.

Dec. 14.—**British Gas Council:** Central Board, Gas Industry House, 2.30 p.m.

Dec. 14.—**Federation of Gas Employers:** Central Committee, Gas Industry House, 11.30 a.m.

A DISTINGUISHED VISITOR

This photograph was taken following a visit to the Coventry factory of George Wilson Gas Meters, Ltd., by Mr. J. Garnett Lomax, C.M.G., M.B.E., M.C., Minister (Commercial) at Buenos Aires, who was taken round the works and showed great interest in the production and assembly of gas meters. Left to right: F. C. Wilson, J. Garnett Lomax, W. D. Wilson, B.E.M., Vincent N. Brailsford (Secretary, Coventry Chamber of Commerce), and D. C. E. Poole.

DOVER'S NEW GASHOLDER INAUGURATED

DOVER Gas Company's new No. 3 gasholder, which replaces one destroyed in the war, was officially brought into operation on Nov. 8 by the Mayor (Alderman A. T. Goodfellow) in the presence of a large gathering of representatives of the gas industry and local dignitaries. The new holder, of the latest all-welded construction, has been designed and erected by the Oxley Engineering Co., Ltd., and, with new workshops being put up nearby, is part of a large scheme of reconstruction and modernization envisaged by the Company and which, it was stated, would eventually enable the Dover works to supply the whole of the Kent coast from Dungeness to Deal.

The new holder comprises an inner lift, 142 ft. in diameter, a second lift 144 ft. 9 in. in diameter, and an outer lift 147 ft. 6 in. in diameter, each 30 ft. deep, in an existing underground tank 150 ft. in diameter by 31 ft. deep. The top curb is a built-up welded section, shop fabricated and butt welded on the site. The vertical stays on the inner lift are fitted with seating plates on the inside to take the top and bottom rows of side plates and also the spiral rail plates at the points where these pass the vertical stays. The second and outer lift vertical stays are fitted with similar seating plates. Each lift is fitted with five rows of circumferential purlins, which leave no large panels of side sheeting unsupported, ensure better distribution of wind loads, and simplify the construction of the lifts.

The Mayor of Dover, Alderman A. T. Goodfellow, turns on the supply. Behind him are (left to right) Mr. W. Ransom, Deputy Town Clerk; Mr. F. M. Birks, Director of the Dover Gas Company; and Mr. R. G. A. Clark, Engineer and Manager.

The spiral rails are continuously welded to the rail plates. No prefabrication was required on the roof or side sheeting. All sheets were delivered direct from the rolling mills to the site, the total weight amounting to 155 tons, or 33⅓% of the total weight of the holder. On the lifts of the new holder all the intermediate side sheeting is placed at 45 degrees parallel to the spiral rail plates, with the advantage that all seams in both directions have the same degree of curvature and are therefore equally stressed under working conditions. With the self-adjusting type of carriage fitted to the holder the roller centres are made to give a minimum of clearance between the roller paths and the rail flanges, ensuring that all rollers bear the same relationship to the spiral rails.

To cover any slight discrepancies in construction of the spiral rails an allowance of ⅜ in. is made for movement of the top slide in either direction. This is controlled by the use of Belleville spring washers. The spindles are of the fixed type, the guide wheels revolving on the spindles. Each wheel is recessed to form a cavity for grease, and grease gun nipples are fitted to enable the cavity to be topped up periodically. All the carriages are fitted with weather guards.

After turning on the tap the **Mayor,** who had been introduced by Mr. F. M. Birks, C.B.E., M.I.C.E., a Director of the Company, said he was particularly glad to have been invited to perform that ceremony because, as a member of the town's Emergency Committee during the war, he knew the wonderful work which Mr. R. G. A. Clark, Engineer and General Manager, and the employees of Dover Gas Company did for the town in those years. While doing their own job particularly well they also did a number of things for which they were certainly not paid but which made for the happiness and welfare of a number of people. Recalling that at least 70 gas mains were fractured in the town during the war, the Mayor said that the new holder was to replace one destroyed by a parachute mine in 1941, when there was no storage whatever in the works for five hours.

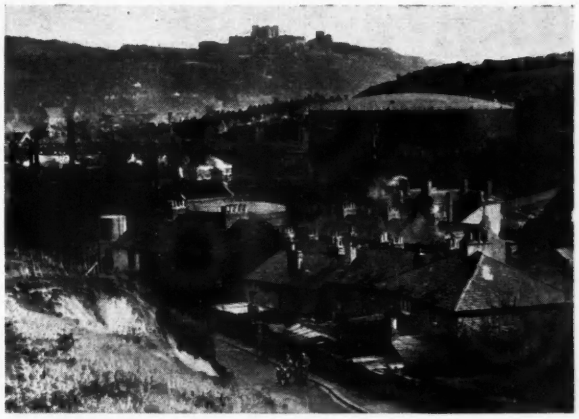
During that period gas was supplied to Dover from Whitstable, 25 miles away. He paid tribute to the model arrangements that were made during those days when Canterbury, Folkestone, Herne Bay, and Whitstable came to the aid of Dover and of each other.

He would also like to refer to one or two things the staff did during the war, often " off their own bat " and before the General Manager had a chance to instruct them.

He recalled how, when the Woolton Restaurant was without gas because of the fracture of a main, the men arranged for the cooking to be done in their fitting shop so that the restaurant's service could be carried on. On another occasion the staff acted as stretcher bearers at the local hospital when the men were being brought back from the Dunkirk beaches and also rigged up boilers in their fitting shop so that the Salvation Army could prepare tea for the troops being brought across the Channel.

Again and again the staff played their part not only in their own job but by showing an interest in the welfare of their fellows by putting in overtime and original thought and effort to help the common need. He was glad to have this opportunity, in the name of Dover, to pay tribute to them. Now they were looking to the future and he considered the new holder suggestive of the prosperity that he believed lay ahead if they would pool their " grey matter " and together work for the good of the country irrespective of creed or political outlook.

The ceremony at the works was followed by a luncheon at the Town Hall over which Mr. Birks presided, supported by the Mayor and Deputy Mayor (Alderman R. L. Eckhoff), Mr. G. le B. Diamond (former General Manager at Dover, now Engineer and General Manager, Rochester, Chatham, and Gillingham Gas Company, and recently appointed Chairman of the West Midlands Area Gas Board), Mr. H. A. Probin (Secretary, South-Eastern Gas Corporation and Dover Gas Company), Rear Admiral H. R. M. Woodhouse (Chairman, South-East Division, National Coal Board), Mr. Herbert Saville (Chairman of the Oxley Engineering Co., Ltd.), and Councillor Paramor (representing Dover Chamber of Commerce).



The new holder (right) built to replace the one destroyed by German parachute mine in June, 1941.

Representatives of other gas undertakings present included: Messrs. J. D. C. Woodall (Maidstone), L. G. Humphrys (Bexhill), G. H. Kenyon (Sheppey, Sittingbourne, and Broadstairs), R. V. Scott (Canterbury), R. H. Ruthven (Ramsgate), T. H. Prater (Isle of Thanet), A. Wells (Herne Bay), G. S. Wareham (Herne Bay), H. Wyver and O. Ashby (Whitstable), and C. Metcalf (Deal).

Mr. **Birks,** proposing the toast of " The Town and Port of Dover," apologized for the absence of the Chairman of the Company, Mr. A. E. Sylvester, who had been called away owing to the illness of his father. The association of the Gas Company with the town and port of Dover had been, he thought, a long and happy one, and he would like to take that opportunity of thanking the Corporation and its officials for the valuable assistance given to the Company during the war —when there was a team spirit in Dover unexcelled anywhere in the country.

" All the romance of English history has passed as a pageant through Dover and along the Dover road and through the Straits," Mr. Birks said, and he concluded by saying that the way on which the Corporation had tackled the problem caused by the 3,000 large calibre high explosive bombs and shells which fell on the town, both in providing new housing and encouraging new industry commanded the admiration of all and gave confidence for the future.

The **Mayor,** who replied, said he thought there was a future before the town which would more than equal its past if those who might

have different views in the political realm worked together to seek the best for the town and port.

Mr. **G. le B. Diamond** proposed "The Visitors," saying that it might well be that that would be his valedictory speech in the South Eastern Region. "I have a deep love for the south-east coast and Dover," he said, "because I stood humbly on the beach after the collapse of Dunkirk, with a gun in my hand and a handful of men beside me and we stood between England and the enemy. Just a handful of men, shopkeepers and men from Dover Gas Company and Folkestone Gas Company and others, we stood on the beach and —how frightened we were. Our knees knocked with fear as we listened for the oars we expected to hear from the on-coming boats. My heart is very full at having to leave this region I love so very much."

Pointing out that he served for some years with the Dover Gas Company, Mr. Diamond said there was no body of men for whom he had a greater affection than the employees of that Company who did such valiant service throughout the war years. The Dover Gas Company was founded in 1822 and had given unbroken service to the public since that time notwithstanding the war years. Many generations of Dover people had served the Company with the knowledge that they were serving the community and doing their best for a Company which looked after their interests.

They believed the construction of the new holder to be "the end of the beginning" of the reconstruction of the Dover Works which, when finished, would serve the whole of the coastal strip from Lydd to Deal and would cost probably around £1,000,000.

A Gesture of Confidence

The **Town Clerk**, who replied on behalf of the visitors, congratulated Mr. Diamond on his new appointment which, he said, had given great satisfaction to the host of friends Mr. Diamond made during his connexion with Dover Gas Company and its associated companies. He congratulated the Company on its past record and on its enterprise as exemplified in that day's ceremony.

"I think you show great confidence in these last days—let us admit it—in conceiving and executing this vast new gasholder," Mr. Johnson said. "We pay tribute to you for the great confidence you have shown in the future." Referring to nationalization, Mr. Johnson said, "Whether we are facing the millenium or not does not depend on an Act of Parliament, or upon a regional controller, but depends on people like ourselves."

The late Lord Ashfield had said that the secret of building up a large-scale organization such as that he controlled was in the solution of the problem of human relationships. So far as the Dover Gas Company was concerned, subjected to that test, it would pass. He wished nothing better than that in this new conception of the gas industry they might be able to preserve those relationships which had meant so much and had been of inestimable benefit to the people. He hoped that whatever changes might come as a result of the Gas Act they would be able to preserve their human relationships.

The function came to an end with an impromptu toast, "Nobby Clark," proposed from the body of the hall and in which all honoured the Engineer and General Manager.

OFFICIAL INSPECTION AT WIGAN

As a souvenir of the official inspection of the works of the Wigan Gas Department on Oct. 27, a handsome 36-page booklet has been issued which tells the story of the development of the works, and gives an account of its present scope in word and finely reproduced pictures.

The visit of the Mayor, Councillor E. Maloney, J.P., came after five years of reconstruction, and the Department thought it appropriate "to place on record a biographical sketch of the undertaking on the eve of another transfer of ownership, on a date shortly to be announced." Though the discovery of gas lighting is properly credited to William Murdoch, the booklet points out that the nature and illuminating value of coal gas was demonstrated in Wigan more than 100 years earlier. The discoverer was the Rev. John Clayton, who distilled gas by placing it in a retort in an open fire. Since Jan. 28, 1823, there has been an uninterrupted supply of gas to the inhabitants of Wigan. For 51½ years this was provided from the plant on the site of the existing works in Chapel Lane by the Wigan Gas Company, until July 1, 1874, when the works was transferred to the Corporation at a cost of £133,091. During the last five years a bold policy of reconstruction has been embarked upon by the Gas Committee. "Replacement of existing plant and major extensions have characterized the Council's confidence in the future of gas and, while the programme is not yet complete, it is justifiably assumed that when the transfer of ownership is accomplished, the undertaking will be utilized as an integral unit and able to make a valuable contribution by way of service to the nationalized industry."

The site of the works is alongside the main north-south line of the former London and North Western Railway, from where coal is moved on to 2,100 yds. of private sidings, the major portion of which was renewed in 1945. In 1944 a new 40-ton railway wagon weighbridge was installed in place of one of 30 tons capacity which had been in use for 30 years. Carbonizing plant consists of 15 beds of retorts, all of which went into operation together for the first time in the winter of 1947-48. In 1924, Drakes, Ltd., of Halifax, erected the first bench of nine beds, ten retorts per bed, of 24 in. by 18 in. by 23 ft. through horizontal retorts, with an electrically operated charger and discharger, and a telpher system of coke handling. A second telpher was added in 1932, a third in 1946. The first extension (1927) comprised three similar beds of ten retorts, but in 1942 a third bench of three beds, ten retorts each, was added. In November, 1946, Drakes, Ltd., were commissioned to build a completely new vertical retort installation of 48, six tons per day continuous upwardly heated vertical retorts, with duplicate coal handling plant, waste heat boilers, and coke handling plant.

Until 1947 there were two carburetted water gas plants, the first built in 1908 and reconstructed in 1916, the other built in 1913. These were manually operated, with a nominal capacity of 700,000 cu.ft. a day of 500 B.Th.U. gas. They have now been replaced by a Humphreys and Glasgow 1¼ mill. cu.ft. a day mechanically operated plant.

Wigan Gas Department supplies an area of 39.8 sq. miles through 183 miles of mains.

On Nov. 4 the then Lord Mayor of London (Sir Frederick Michael Wells) inaugurated an installation of modern gas street lighting on London Bridge. The installation comprises 18 Concrete Utilities reinforced concrete columns with 5 ft. bracket arms of a design approved by the Royal Fine Arts Commission carrying 10-mantle Sugg "London" lamps and Keith Blackman raising and lowering gears. The lamps are mounted 25 ft. above the roadway, overhang the roadway so that the lanes of lamps are 30 ft. apart, and are spaced at intervals of 120 ft. along each pavement so that lamps on both pavements are opposite each other, and provide over 7,000 lumens per 100 ft. linear of roadway, thereby complying in all respects with the Ministry of Transport's recommendations for Street Lighting. From the photographs of the old (left) and new (right) lighting it will be seen that a great improvement has been achieved. This improvement has been effected at an increase of less than half a therm of gas per hour. The diversity ratio of the light on the roadway is only 5 to 1 as compared with a ratio of 100 to 1 for the old lighting.

SHELL BOILER RESEARCH

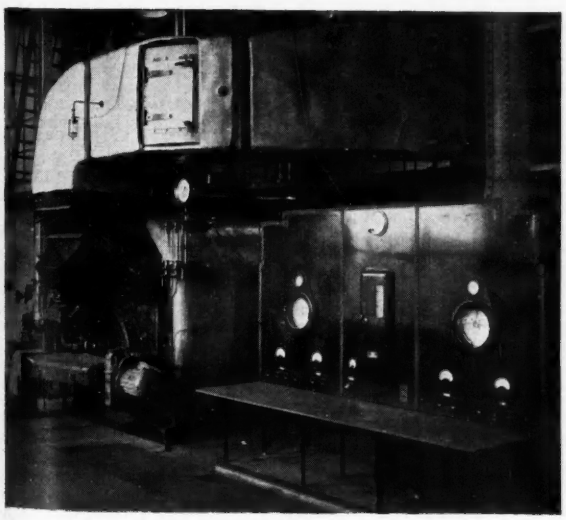
RECENT PROGRESS AT B.C.U.R.A. LEATHERHEAD LABORATORIES

OVER 100 mill. tons of coal (50% of the total output) is consumed yearly for steam raising in industry, solid fuel-fired furnaces, and electricity generating stations. A saving of 10 mill. tons is the objective envisaged in the research programme of the Shell Boiler Department of the British Coal Utilization Research Association. This Department forms a section of the Steam Engineering Division of the Association, which was formed about five years ago under the direction of Dr. E. G. Richie. It was early realized that the success of the Division, so far as shell boiler research was concerned, depended upon the close integration of the work with the practical needs both of the manufacturers and of the users of steam-raising plant. With this end in view an Advisory Committee called the Shell-type Boiler and Firing Equipment Committee (R/16) was formed in 1943, under the Chairmanship of Mr. W. L. Boon, with Dr. E. S. Grumell as Vice-Chairman. This Committee which was, recently reconstituted consists of 20 members representative of the Shell Boiler Makers' Association, the Stoker and Furnace Makers' Association, the Ministry of Fuel and Power, the Department of Scientific and Industrial Research, the Ministry of Works, the National Coal Board and B.C.U.R.A. Several panels were formed to deal with individual items on the programme and, recently a Sub-Committee has been set up in Sheffield, under the Chairmanship of Professor R. J. Sarjant, to study the programme and to conduct field tests in that area. It is hoped to form similar groups in other centres in order to widen the sphere of influence of the Committee.

The work of the Shell Boiler Department is mainly concerned with Lancashire and economic boilers and their firing equipment. Experimental work in this field is, however, applicable to locomotives and marine boilers and to waste-heat boilers. So far as the work concerns fuels and firing appliances, the results have a direct bearing on the mechanical stoking of industrial furnaces and on central heating.

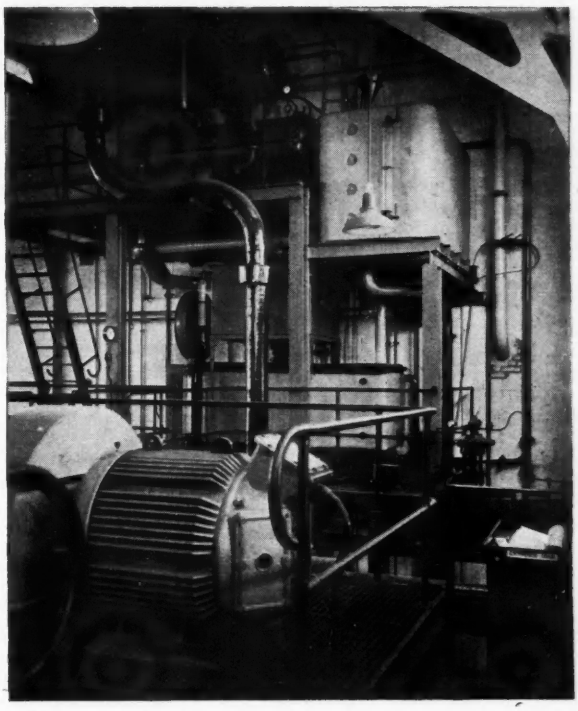
The general programme covers a study of water circulation and steam disengagement, the influence of rating on efficiency, heat transfer and the effect of the number and diameter of the furnace tubes and smoke tubes. So far as the firing appliance is concerned, the investigation includes experimental work on the different types of stokers, the distribution of coal on the grate, the distribution of combustion air, and the influence of air preheating. All these factors are being studied in relation to the grading, the volatile, ash, and moisture contents, and other characteristics of different fuels.

Until the end of 1947, experimental work had to be carried out in the field as no facilities were available on B.C.U.R.A. premises, and the Association was assisted by a number of companies which placed boilers at its disposal and offered assistance for experiments to be carried out. The work done during that period has been described in a report entitled *The Influence of Certain Factors on the Performance of Shell-type Boilers.** This excellently produced report sets out in the fullest detail the results of tests on various aspects of performance, such as the influence of excess air, rating, fuel characteristics, the measurement of flue-gas temperature, and the surface heat loss in shell boilers. The main conclusions may be listed as follows:



A general view of the New Experimental Boiler.

(*a*) Shell boilers of either the Lancashire or the economic type are capable of high efficiency provided they are adequately equipped, well maintained, and properly operated. The efficiency increases with decrease in rating, and emphasis is laid on the necessity for economy of fuel effected by overload.



A close-up of the Feed Water Measuring System on the Boiler.

(*b*) The mechanical stokers at present available are not over-selective as regards fuel size. They can handle coals containing up to 40% of fines without undue sacrifice of efficiency, and rather better results are obtained with small coals then with larger graded coals.

(*c*) The ash content in coal has an important effect both on boiler output and on efficiency. For efficient and satisfactory operation the ash content ought not to exceed the minimum required to prevent overheating of the firebars.

(*d*) In many industrial plants a fuel saving of 20 to 30% might be obtained by proper control of combustion and the prevention of excess air leakage into the furnace tubes. This perhaps offers the greatest scope for large-scale fuel saving, since some 10 mill. tons of coal per annum are being wasted in industrial boiler plant by avoidable air leakage in the neighbourhood of the fuel bed.

It became obvious during the progress of the field work that, if the programme of research were to be carried to a successful issue, it would be necessary for the Association to have at its disposal a fully equipped steam engineering laboratory. Provision was therefore made for this in the new experimental station at Leatherhead.

The boiler installed is a single furnace tube double-pass economic boiler having a total heating surface of 1,221 sq. ft. and generating 8,000 lb. of steam per hour at a pressure of 100 lb. per sq. in. It is fitted with forced and induced draught plant providing a wide and controllable range of experimental conditions, and arrangements are being made to enable the combustion air to be preheated. All steam generated is passed through a pressure regulator to a condenser and condensate cooler, which discharge into a feed tank. From this the feed water passes into the hot-well by way of a measuring tank mounted on the platform of a weighing machine. The feed pump is of the motor-driven centrifugal type, and the boiler is equipped with an automatic water-level regulator. To ensure that representative flue-gas samples and accurate exit gas temperatures are obtained, the breeching between the smoke-box and the induced-draught fan has been fitted with a venturi throat whereby point readings can be taken. The boiler is, at the moment, fitted with a compartmented chain-grate stoker, but provision is made for substituting any other type of stoker at short notice. Fuel is weighed and sampled on the firing floor.

* Now available from the British Coal Utilization Research Association, Randall Road, Leatherhead, Surrey. Price 12s. 6d.

I.G.E. RESEARCH MEETING

The 14th Autumn Research Meeting of the Institution of Gas Engineers will be held on Wednesday and Thursday, Nov. 24 and 25, at the Institution of Civil Engineers, Great George Street, London, S.W.1, commencing at 10 a.m. each day.

The programme will include the presentation and discussion of the following Communications:

9th Report of the Chairmen's Technical Committee: 1946-48 (Communication No. 341).

25th Report of the Gas Education Committee: 1947-48. (Communication No. 342.)

Coke for Use in Open Fires from Continuous Vertical Retorts. Some Aspects of its Production and Characteristics, by T. F. E. Rhead, M.Sc., M.Inst.Gas E., F.R.I.C. (Chief Chemist), and E. T. Pickering, B.Sc., M.Inst.Gas E., F.R.I.C. (Senior Chemist), Birmingham Gas Department. (Communication No. 343.)

The Catalytic Removal of Organic Sulphur Compounds from Coal Gas, by J. H. G. Plant, B.Sc., A.M.I.Chem.E. (Chemist), and W. B. S. Newling, M.A. (Chemist), Gas Light and Coke Company. (Communication No. 344.)

An Application of the Fluidized Solids Technique to Coal Gas Purification, by R. H. Williamson, M.Sc. (Research Fellow to the National Gas Association of Australia), and J. E. Garside, Ph.D. (formerly Lecturer in Fuel Technology, University of Leeds.). (Communication No. 345.)

Institution Gas Research Fellowship Report : 1947-48. A Study of Aerated Burner Flames. VII—Further Measurements of Ignition Velocity and Flame Stability, by G. W. Culshaw, Ph.D., F.R.I.C. (Institution Gas Research Fellow), and J. E. Garside, Ph.D. (Communication No. 346.)

39th Report of the Refractory Materials Joint Committee. (Communication No. G.R.B. 41.)

The Breakage of Coke by Mechanical Means (Interim Report), by V. T. Taylor, B.A., A.M.I.Mech.E., and D. Hebden, B.Sc., Ph.D. (Gas Research Board). (Communication No. G.R.B. 42.)

The Hardening of Oxide in Purifiers (Interim Report), by F. J. Dent, D.Sc.; L. A. Moignard, M.A., D.Phil.; J. W. A. Buckley, M.Sc.; W. D. Davis, B.Sc.; and A. D. S. Tantram, B.A., B.Sc. (Gas Research Board). (Communication No. G.R.B. 43.)

ADAMS BECK

M.V. "Adams Beck," which is the first of five diesel colliers now being built for the Gas Light and Coke Company, was launched at Burntisland on Oct. 14 by Mrs. Michael Milne-Watson, wife of the Governor of the Company. The vessel,

built by Burntisland Shipbuilding Company, Ltd., will carry about 2,600 tons of coal and is being specially constructed to deliver cargoes to gas-works above the Thames bridges. When in commission, the m.v. "Adams Beck" will be the first motor vessel to be added to the Company's present fleet of 19 steam colliers.

GAS ACT, 1948

Draft maps have been prepared by the Ministry of Fuel and Power showing the boundaries of the areas of the Area Gas Boards to be set up under the Gas Act. Copies of the draft maps are available for inspection by the public from Nov. 16 to Nov. 27. Suggestions made during that period will be considered by the Ministry before the final map is prepared for the purposes of the Order to be made under Section 6 of the Act. They should be sent to the Assistant Secretary, Gas Division, Ministry of Fuel and Power, 7, Millbank, S.W.1.

The times of display are: Monday to Friday, 9.30 a.m. to 12.30 a.m. and 2 p.m. to 5 p.m. Saturday, 9.30 a.m. to 12 noon.

The places at which the maps will be displayed are: Ministry of Fuel and Power, 7, Millbank, S.W.1; Regional Coal Office, Oakfield Court, Grovehill Road, Tunbridge Wells; Regional Office, Whiteknights, Earley, Reading; Regional Office, 12-14, Apsley Road, Clifton, Bristol, 8; Regional Office, Shaftesbury Road, Brooklands Avenue, Cambridge; Regional Office, Government Buildings, Chalfont Drive, Apsley, Nottingham; Regional Office, 63, Hagley Road West, Birmingham, 17; Regional Office, 27, Newport Road, Cardiff; Regional Office, Century House, South Parade, Leeds, 1; Regional Office, Government Buildings, Ponteland Road, Newcastle-on-Tyne, 5; Regional Office, Burton Road, West Didsbury, Manchester, 20; Regional Office, 51, Cockburn Street, Edinburgh, 1.

INSTITUTE OF FUEL 1948-49 PROGRAMME

The principal item in the programme for the new session of the Institute of Fuel is a Conference on "Combined Heat and Power Supplies." Two full days will be devoted to this by the London Section, one in January and one in April, and one full day in May in Manchester by the North Western Section. The papers presented will be J. Edward on the "Elements of Heat Balance"; J. B. M. Mason and L. Clegg on "The Heat Balance in Practice"; Dr. E. G. Ritchie on "Steam Peak Demands"; F. N. Taylor and H. M. Peacock on "Interchange with the Grid"; L. D. Anscombe on technical aspects of the same (these papers will recall G. M. Rimmer's fine paper presented to the Institution of Gas Engineers last year); Dr. G. E. Foxwell on "Surplus Heat or Power Supplied to Adjoining Works," and H. E. Partridge on "Co-ordinating Heat and Power in a District." These papers should form in combination a pretty comprehensive treatment of a subject which is rapidly assuming very great importance.

Domestic heat supply, with the allied subject of smoke abatement, has attracted several sections. In March the London Section will discuss the Report on District Heating by the Mission sent by the Ministry of Fuel and Power to study American practice. The Midland Section are to have a lecture on domestic fuel on Dec. 1; R. H. Rowse will speak to the South Wales Section in March on the work of the Fuel Research Station in this field; while the usual joint meeting of the North Western Section with the National Smoke Abatement Society will be addressed by the Section's Chairman, Mr. P. D. Kirkman, on "The Efficient Use of Fuel."

A paper was presented to the Scottish Section on Oct. 29 by T. C. Finlayson on "Recent Developments in Carbonization," F. Bell will discuss the "Distribution of Gaseous Fuel" with the North Western Section in January, and Dr. H. A. Fells is to deal with "Modern Gas Furnace Technique" in Nottingham.

"The Costing of Heat and Power" was dealt with in a series of short papers by B. C. Newbury, G. W. Pirie, and J. R. Rylands presented to the London Section on Nov. 23, and "Heat Costing" is the title of a paper by T. B. Maxwell on Nov. 26 (provisionally) to the Scottish Section.

Steam and steam boilers will be treated by J. E. O'Breen in a paper on automatic control to the North Western Section, R. F. W. Guy will discuss both in Manchester and on Merseyside recent developments in automatic stokers for shell-type boilers, a film will be exhibited in April at Nottingham showing combustion and the chain-grate stoker, and two films will be given at Leeds in December, one with the same subject, and the other, presented by Professor R. J. Sarjant, will illustrate "Furnace Practice." Water treatment is the subject of a paper by W. F. Gerrard in December to the East Midland Section, and another by G. Nonhebel in London in February. "Emulsion Technique" is the title of a paper to be given in London on Dec. 23 by Dr. L. R. B. Shackleton. Dr. J. E. Garside is to address the Yorkshire Section on the principles and application of "Fluidization." Fuel efficiency is engaging the attention of most sections. S. N. Duguid talks to the North Western Section both at Manchester and Liverpool on "The Fight for Fuel Economy." The Midland Section have two papers, F. C. Ashen (I.C.I.) on "Fuel Economy in a Large Works" and A. Stirling on "Fuel Efficiency" at Corby. Yorkshire is putting on a brains trust in January and in March J. B. M. Mason and L. Clegg will discuss "Heat and Power Targets for Industry," while in Scotland a "Ministry nominee" is to talk in January on "Fuel Efficiency on the Firing Floor."

Oil is represented by another paper by J. A. Oriel at Cardiff on his own subject, "Some Aspects of the Oil Industry," and J. R. Joyce is to give a paper in Leeds on the "Atomization of Liquid Fuels for Combustion."

Fuel technology in general is to be dealt with in three papers, "A Modern Outlook on Fuel Technology," by Professor R. J. Sarjant, in Sheffield this month, "Statistical Methods in Fuel Technology," by Professor Sarjant in collaboration with G. H. Jowett, in March, and a history of the subject by A. D. Cummings in Nottingham on Mar. 17 to the East Midlands Section.

Other papers are Dunbar Ferns on "Evaporation Thermal Drying," and R. P. Towndrow on "Blast Furnace Practice," both in Glasgow; "Briquetting," by G. J. Jones, this month at Swansea; "The Coal-fired Gas Turbine," by Karthauser, Battock, and Ross (an abstract of which appears in the "GAS JOURNAL" of Nov. 3); and a lecture by Dr. D. T. A. Townend on "Some New Fields in Combustion," to be delivered to the East Midland Section at Loughborough on Jan. 14.

EASTERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS

DIAMOND JUBILEE MEETING

THE Autumn Meeting of the Eastern Association of Gas Engineers and Managers was held at the Waldorf Hotel, London, on Nov. 12, the President, Mr. F. Allen, Engineer and Manager of the Clacton-on-Sea Gas and Water Department, presiding over one of the largest attendances on record for a London meeting of the Association. Apologies for absence, accompanied by best wishes for a successful meeting, were received from Mr. A. E. Sylvester, Chairman of the Gas Council, Sir John Stephenson, Chairman of the Eastern Area Gas Board, Councillor Greaves, Chairman of the Clacton Urban District Council, and the Presidents and Secretaries of several of the sister District Associations.

The **President** referred with sorrow to the death of Mr. Henry Woodall, the first Hon. Member of the Association, Mr. F. Taylor, a member since 1917 who had retired to the Isle of Wight, and Mr. J. B. Hansford, formerly Engineer at Bedford who, though not still a member, had been President of the Association in 1928.

On the proposition of Mr. **C. E. Grimwood** (Sudbury), the following new members were elected: R. C. Arnold, Engineer and Manager, Spalding; G. W. Ellis, Managing Director, Berkhamsted; and A. F. Topley, of the Woodall-Duckham Company (Heronsgate).

Mr. **T. N. Jackson** (Harwich) proposed and Mr. **L. C. B. Williams** (Thetford) seconded the election of Mr. B. Clarke (Stamford) and Mr. F. N. Howes (Chelmsford) as scrutineers for the ballot at the next spring meeting for the election of officers for 1949-50.

The **President** said that in the regretted absence of the President of the Institution of Gas Engineers it gave him great pleasure to present Higher Grade Certificates to those students from the Eastern area who were successful in last year's examinations. He had been Chairman of the Eastern District Education Committee at the time of its revival after the war and was still extremely interested in that part of the Association's work.

The recipients were: C. W. Banyard (Lincoln); R. Bottomley (Bedford); N. Hoyle (Peterborough); C. L. Maxey (Grantham); A. T. O'Connor (Rushden), and A. H. Woods (Watford). There were also certificates for the following, who were unable to be present: P. R. Clarke (Cambridge); H. C. Robinson (Grimsby); R. M. Sharpe (Boston); and P. L. Swan (Cambridge).

Presentation to Past President

The **President** presented a travelling clock to Mr. R. A. Weston (Norwich) in appreciation of his services as President during the past year and as a memento of the esteem in which he was held in the Association. They all knew Mr. Weston well; they knew what a good friend he had been to the Association; and they knew of what he had done in the old Eastern civil defence region and the great work he was still doing for them as coal spokesman.

Mr. **Weston,** in acknowledging the presentation, said he had greatly enjoyed his Presidential year, and he was more grateful to the Association than its members need ever be to him.

The report and accounts were then approved and adopted on the proposition of Mr. R. A. Weston, seconded by Mr. A. E. Simpson.

Colonel **J. Kennington** (Grimsby) proposed that a donation of £30, the same as for the previous year, should be given to the Benevolent Fund of the Institution of Gas Engineers. This, he said, was a part of the industry that could not be taken over lock, stock, and barrel. It was their duty to continue rendering whatever help they could to the Benevolent Fund.

Mr. **J. Young** seconded and the donation was approved.

Councillor **D. Fraser Howe,** Chairman of the Clacton-on-Sea Gas Committee, said he was an amateur among experts, but it had been a great pleasure to sit under the Presidency of Mr. Allen, and on behalf of the Clacton authority he assured the Association that they were very proud to think that, as technicians, the members of the Association had had sufficient confidence in him to elect him as their President. He had been asked by his Council to invite the Association to visit Clacton for their May meeting next year.

The **President,** in accepting the invitation on behalf of the Association, said the meeting would be sandwiched between the conferences of the Licensed Victuallers' Association and the Ladies' Hairdressers' Association.

The **President** then delivered his Presidential Address, which will be published in a later issue of the "JOURNAL."

A Meteoric Career

Mr. **J. Hunter Rioch** (Cambridge) proposed a vote of thanks to Mr. Allen for his address. His rise, he said, had been a meteoric one; seldom if ever had they had one who reached the chair in so short a time as seven years after becoming a member of the Association. The President had referred to his address as probably being the last to be given to the Association by the engineer of a company or municipally-owned undertaking, and one was tempted to ponder over the effect on the subject matter of such addresses, which nationalization or indeed any other form of integration must inevitably have in the course of time. Attention was drawn to the history of an undertaking gradually developed as an individual unit under the guidance of a number of engineers who, by their personal efforts, their individual attention to detail, had brought it to the creditable position in which it stood to-day.

In a period of some 50 years the output of the Clacton undertaking had increased by more than 21 times, with the consequent reconstruction and development which was still going on. A popular coastal summer resort as it was, Clacton not only had a load different from that of the majority of undertakings, but its geographical situation had brought it exceptional problems resulting from the war and the immediately succeeding years. These had been admirably presented in the address. It was not usual to discuss a Presidential address, nor was it his intention to do so, but he focussed attention on the items he had mentioned in order to place on record the high devotion to duty of their President, which was characteristic of members of the industry as a whole and which, in the past, had been the mainstay of its development.

One could well imagine how different would be the problems of the gas engineer of the future, with the resources of nationalization behind him to meet the conditions, and to smooth out the peaks—which had been so interestingly described that afternoon. Gas engineers were approaching a period which marked the dividing line between two distinct eras in the history of the gas industry, and it was certain that the future problems and opportunities would be different, though no less interesting. The President had referred to the work of the Regional Gas Engineering Advisory Boards and his address was typical of the work he had done for the Eastern Regional Gas Engineering Advisory Board since its inception. The enthusiasm, the energy, and the attention to detail in his work for the Board, and through it for other undertakings in the area were amply reflected in the quality of his address, and as one closely concerned with the organization of the Board he was glad of the opportunity of paying high tribute to his willing work.

The President's modesty was reflected in the manner in which he had presented the carbonizing results of his undertaking—results on which he was to be congratulated. The data given indicated the achievement of an average Fuel Expenditure Index of 19.8 over a period of 15 years, surely a record of which to be proud. During his own Presidency of the Association the Education Committee was fully established, and Mr. Allen kindly agreed to become the first Chairman of the Committee. He had done valuable work and his enthusiasm for that important aspect was shown in his suggestions for development and extension of education schemes. It therefore gave him the greatest possible pleasure to propose a hearty vote of thanks to the President for his address, the subject matter of which was so singularly well chosen, having regard to the phase through which they were now passing.

Mr. **W. J. Collins Garrard** (Ipswich) seconded the vote of thanks and remarked that the President was known among his friends as "Forthright Frank." His whole address was full of interest and worth reading over and over again. The Clacton undertaking was to be congratulated on having such a splendid engineer at the head of affairs as Mr. Allen, and the Association could equally congratulate itself on having such a President.

The **President** briefly and modestly acknowledged the vote of thanks and said his efforts were amply repaid by the friendship and pleasure he had found in his membership of the Association.

The Institution Building Fund

The **President** said the next item on the agenda was to receive a report from the Association's representative on the Council of the Institution of Gas Engineers. As such representative he felt there was little to report that was not already common knowledge among the members. The Presidents and Secretaries of the District Associations had considered the question of the District Associations becoming District Sections of the Institution, but the whole matter had been referred back. The one other matter on which he wished to speak was the Institution Building Fund. Presidents had been particularly asked to bring that to the attention of members. Gas undertakings had contributed very liberally to the Building Fund for new headquarters for the Institution—and there was no need at this stage to emphasize the necessity for headquarters entirely separate from the nationalized industry—and the members of the Society of British Gas Industry had also con-

tributed very generously. There had, however, been disappointment concerning contributions from individual members of the Institution, which had not been forthcoming to the extent anticipated when an assurance was given to the Ministry of Fuel and Power that the rank and file would support the scheme. He therefore warmly commended the appeal to the members, not necessarily for large individual amounts, but for tokens of their genuine interest in the scheme.

Educational Work

Mr. **R. C. Wardell** (Boston), Chairman of the Eastern District Education Committee, reported that the past year had seen another milestone reached in the progress of the industry's education scheme. He would not go into details of the new regulations, which were available for anyone interested. The requirements of the industry so far as examinations were concerned were fully covered and it remained for students and executives to take advantage of them. He included executives advisedly, because in the majority of cases they were the first contact the student had with the education facilities of the industry. He asked all the members therefore to be conversant with the various courses so that they could in the first place help the student to decide which would be the most suitable and then put him in touch with the Education Committee which in turn would do its best to advise him as to the best method of study for his course.

They had endeavoured to get classes going in the Eastern area but so far not with much success due to two main reasons, lack of students and difficulty of travelling. Lack of known students was the chief stumbling block, as they found in the case of gas fitting examinations, where there were more students available, a number of centres had been started in spite of travelling problems. If every potential student was brought to their notice it might be possible to get one centre established. Owing to the wider and more comprehensive syllabus of the new regulations it would be more difficult for the student to cover the ground and it was hoped that where possible the system of part-time release would be employed, whereby a student would be allowed time off from his work to attend day classes. If they were to obtain the requisite number of qualified personnel to man the industry they must do all they could to help the student with his training.

Until a course or courses could be started the Education Committee had been considering what other steps could be taken to assist students in their studies. Two years ago they suggested that one of the advantages of having a Junior Gas Association in the area would be that it could help to train the younger engineer by giving him the opportunity of listening to informative papers on the various aspects of the industry. Pursuing that line of thought, it was suggested at their last meeting that a series of text books covering the new syllabus, together with other works of reference, might be purchased and handed over to the Eastern Junior Gas Association's library which had just been started. Any *bona fide* student could borrow books from the library until such time as he could purchase copies for himself. Until the complete set of books had been compiled the actual cost could not be ascertained but they were looking into the possibility of raising the necessary money.

The intensive courses which had been held at various centres throughout the country under the Government's Further Education and Training Scheme had served a useful purpose. They had enabled students whose studies were interrupted by the war to complete their training in the shortest possible time, so helping to meet the need for trained men. One course had been held in Cambridge for the Higher Grade Examination in Gas Engineering (Manufacture) and they were indebted to Mr. Hunter Rioch for the part he played in getting the course under way. Unfortunately the Ministry of Labour and National Service were not sponsoring any further courses as the persons whose studies had been interrupted as a result of war service had now all been trained. A number of undertakings had allowed members of their staffs to act as lecturers and examiners for various examinations and all concerned were thanked for the useful service they had rendered.

In July a short course for teachers in Gas Engineering and Gas Fitting, extending over one week, was held at Newcastle by the Ministry of Education. The purpose of the course was to consider methods of instruction in those subjects, and the course included lectures and discussion on teaching methods, on the use of the voice, of the blackboard, and other visual aids. It was proposed to hold another course next year at Southampton, and he hoped all undertakings with members of their staffs teaching would give serious consideration to the possibility of allowing those men to attend such a course, as it would help them to put their subjects over in the most efficient manner and consequently would eventually produce better trained students.

The **President** thanked Mr. Wardell for his report and for all his work in the interests of education in the area.

WELCOME TO AREA GAS BOARD CHAIRMEN

The meeting was preceded by a luncheon at the Waldorf Hotel, at which the principal guests were Mr. E. Crowther, President of the Institution of Gas Engineers and Chairman of the Northern Area Gas Board, Mr. Henry F. H. Jones, Chairman of the East Midlands Area Gas Board, Colonel H. C. Smith, Deputy-Chairman of the Gas Council, and Mr. R. Kelf-Cohen, Under-Secretary, Ministry of Fuel and Power (Gas Division).

Mr. **E. Crowther,** proposing the toast of the Association, said that like himself the President of the Association was an old boy of Wallasey. They had been colleagues in the past and it was therefore a pleasure to support him on the present occasion. It was one of the pleasures of the President of the Institution to visit the District Associations, and wherever he had been he had found uniformly the same sense of loyalty on the part of the members. They were all anxious, persistently eager for the welfare of their respective Associations, and everybody felt himself to be a vital part of his Association—and that was a most admirable thing at any time and particularly at this juncture in the affairs of the gas industry, when they were all on the point of leaving an old order and entering upon a new order. That sense of comradeship, and loyalty, and friendship with one another that existed between the members of the District Associations was going to be even more necessary and more important in the future than it had been in the past. They expected to see developments which in the ordinary course might have taken generations—developments in integration—telescoped into a relatively short time, and the sense of unity and comradeship imparted to all of them through their professional associations was going to help in that acceleration. The successful progression of the industry into the new order would depend on the practising engineers and managers, and the District Associations might well serve as a bridge between the old order and the new and enable accelerated progression to take place without a jar, and in a smooth and orderly fashion.

Interchange of Ideas

Members of the Eastern Association served undertakings which were dispersed in parts of two of the new Areas, and it might well be that such an arrangement would facilitate the exchange of ideas between one region and another, just as in the past their Association had provided means for the exchange of ideas between one undertaking and another. He was very pleased to be sitting near to Mr. Henry Jones, who needed no introduction to the Eastern Association. He was a practical gas engineer and would know their work well. He was also glad, even in his absence, to have the opportunity of commending Sir John Stephenson, Chairman of the Eastern Area Gas Board, to them. Sir John was less familiar with the industry and its work and personalities than some of his colleagues, but he could assure him that he would find the Eastern Association an extremely loyal and co-operative body in assisting him to carry out his responsibilities. He would discover it immediately for himself and would avail himself of that atmosphere of goodwill and mutual confidence which was going to be so vital to the well-being of the industry in future.

The Gas Act placed on the Area Boards a number of responsibilities, one of which was towards the welfare as well as the training and education of the people who served the industry, and he felt that in the District Associations the Area Board Chairmen would find, already at hand, the most available means of carrying out those responsibilities from the very beginning. "Welfare" could be interpreted very widely and he was sure that the friendly atmosphere between engineer and engineer and between manager and manager which had inspired the District Associations would be a major factor in the welfare of all those employed in all sections of the industry. He commended Sir John Stephenson to them with those views in mind. He submitted for their consideration the suggestion that there might be a valuable purpose served both for the new Area Boards and for themselves, if the District Associations were to prepare a memorandum setting out how in their opinion they could best assist the Area Boards in the responsibilities which they had to undertake, because many of the pre-occupations with which they had been concerned, and would in future be concerned, fell strictly in line with some of those duties.

He felt that some of the commercial functions which the District Associations had performed must necessarily be expected to diminish in the future. On the other hand their technical and educational functions must and should expand. It would be agreed that in the future there would be closer correspondence between the work of the District Associations on the regional scale and that of the Institution of Gas Engineers on the national scale, and for that reason if for no other there seemed to be a very logical case for the transformation of the District Associations into Regional or District Sections of the Institution of Gas Engineers; indeed, he was sure Colonel Smith would permit him to tell them that quite spontaneously and without prompting on his

part he had expressed the opinion that the proposals of the Institution in that matter appeared to him to be a very sane and sensible manner of dealing with the altered situation with which they all had to cope in the future. The Institution stood ready to assist and collaborate with the District Associations, but did not by any means seek to force its opinion on them.

Some at least of the District Associations would like to see how the future was going to shape before committing themselves to any change in their constitution, and they had therefore decided to let the matter stand over until, if they so desired, the District Associations themselves approached the Institution with a view to having the matter reopened and reviewed. He emphasized that the Institution stood ready to consider their views at any time they felt to be appropriate.

Paperettes for Institution Meeting

Digressing from his topic for a moment he wanted to submit an embryo idea for their consideration, and if they thought well of it he would look for their co-operation. It was felt that up and down the industry there were people who made some small discoveries, some small invention or alteration in practice or organization, of which the Institution did not hear anything at all, or did not hear until a long time had passed. Such a departure was probably too small for a paper to be written round it. The idea was that instead of one of the customary papers at the annual meeting of the Institution the industry should be invited to submit brief papers on such departures, occupying probably not more than five minutes. It was hoped that they might have a series of 10 or 12 such short contributions, and everyone who had something novel to tell the Institution would have an opportunity in that way. The idea might give the junior members an opportunity of trying their wings in the rather formal atmosphere of the annual meeting. He was sure that most gas engineers had something of which the rest of them did not know, and the proposal might afford the opportunity of passing on useful ideas.

He felt the Eastern Association had done a particularly valuable job in an area where distances were relatively great and it had imparted its forward outlook to the new live Junior Association, which in its turn would do a very good job of work as time went on. He congratulated them on the good work they had accomplished and had every confidence in their future.

Unique Occasion

The **President,** in responding to the toast, assured Mr. Crowther that the suggestion regarding the preparation of a memorandum recording the practical usefulness of the Association would receive the early and earnest consideration of the Council of the Eastern Association. He congratulated him on the appointment he had so richly deserved and amply merited—that of being made Chairman of the Northern Area Gas Board. To him it was a matter of great personal gratification that he should have Mr. Crowther's support that day. A long time ago they were associated together and he owed a debt of gratitude to Mr. Crowther's father, the late Mr. J. H. Crowther, who guided his early footsteps in the industry. The present meeting was unique in that this was the first District Association meeting to be honoured by the presence of two newly-appointed Chairmen of Area Gas Boards. In addition to Mr. Crowther he welcomed Mr. Henry Jones, Chairman of the East Midlands Area Gas Board and congratulated him on his appointment to the area in which many of the members of the Eastern Association were intimately concerned.

Many members were more intimately concerned with the Eastern Area, and the moment they had official intimation of the appointment of Sir John Stephenson as Chairman of the Gas Board for that area the Secretary contacted him on behalf of the Association and invited him to be present. Unfortunately, Sir John had another engagement which prevented his attendance, and he had been asked to express his sincere regrets that he was not able to be with them. Mr. Henry Jones was not a stranger to some of their members, and there could be no more fitting opportunity for him to make the acquaintance of many more of the members. He also thanked Colonel H. C. Smith, Deputy-Chairman of the Gas Council and a member of the Association of long standing, for honouring them with his presence.

The occasion was unique in another respect, for the Association was inaugurated just 60 years ago. This was their Diamond Jubilee meeting and they could all feel justly proud of an Association with such an honourable and honoured career which had so ably carried out its first object: "To promote the fellowship of its Members and Associates and to encourage the advancement of the gas industry." Due to the exigencies of two wars and other causes he was not the 60th President but only the 55th, but he was proud to have been elected to follow the many distinguished gas engineers who were past Presidents of the Association, an Association which to-day embraced practically every chief technical or executive officer of gas undertakings between the Thames and the Humber and from the North Sea to midway through England. He was conscious that he was still a comparatively newcomer among them, but he believed the Association had never been so strong as during the past few years, and, more important than numbers, he was assured by older members that there had never been a finer spirit of mutual helpfulness than had been manifest during and since the war years.

He hoped that District Associations such as the Eastern, which had done such good work in the past, would remain active under the new régime and grow to new strength.

The Guests

Mr. **C. E. Grimwood,** Senior Vice-President, proposed the toast of the guests, among whom he specially mentioned Mr. Crowther; Dr. W. T. K. Braunholtz, Secretary of the Institution; Colonel H. C. Smith; Mr. J. R. W. Alexander, General Manager of the British Gas Council; Mr. Henry Jones; Mr. R. Kelf-Cohen, Under-Secretary, Ministry of Fuel and Power, Gas Division; Wing Commander N. S. Roupell, Regional Controller; Mr. E. J. Maycock, Regional Gas Officer; Mr. J. Thornhill, Coal Supplies Officer; Dr. P. C. Thorne, of the Ministry of Education; Mr. L. P. Ingram and Mr. J. M. Webber, President and Secretary of the Southern Association of Gas Engineers and Managers; Mr. J. S. Marshall and Mr. R. K. Hilham, President and Secretary of the Eastern Junior Gas Association; Mr. D. Fraser Howe, Chairman of the Clacton U.D.C. Gas and Water Committee; and Mr. S. Francis, son of Mr. Allen's late chief at Clacton. He referred also to the Technical Press and mentioned the forthcoming centenary of the "JOURNAL"; he offered the Association's congratulations and expressed the hope that the "JOURNAL" would go forward for another 100 years. Lastly he welcomed some of the successful students from the area in this year's Institution examinations.

Mr. **R. Kelf-Cohen,** in reply to the toast, complimented the proposer on being responsible for the gas supply in three of the most beautiful little towns in the eastern counties—Sudbury, Long Melford, and Lavenham. Nothing pleased him more than, when he could get away from plotting Gas Acts, to spend a few days in that part of the country. The old order was changing, giving place to new, and while he looked back with pleasure to the honour of responding to such a toast he was disposed to tremble at the thought of what might happen in the future as he looked towards Colonel Smith, Mr. Crowther, and Mr. Jones, three of his new masters. They may have noticed that in the Gas Act the Minister was given powers to do certain things, but on studying the Act more closely they would see that most of the things he was empowered to do were to be done only "after consultation with the Gas Council." They all knew how anxious Ministers, and particularly civil servants, were to take advice, and speaking for himself he assured them that he would listen to their advice with great respect in the future.

Keeping the Flag Flying

He had had the pleasure of meeting Sir John Stephenson on a number of occasions and talking about his future responsibilities, and he could tell them that he knew their area fairly well and was fully conscious that he would have a wonderful staff working with him. In the Eastern Counties distances were great and difficulties were sometimes great, too, but the gas undertakings in the area had kept the flag flying marvellously well, particularly during the war. At times it was a very difficult task to keep the Eastern Counties supplied with coal, and the work which Mr. Weston did in that connexion was particularly helpful. Sir John Stephenson's task was not going to be easy. When an industry was nationalized the public seemed to think that everything was going to be changed overnight; that the new industry was going to be something wonderful and that all the things they had been hoping and praying for would suddenly appear. They had allowed themselves to say some rude things about British Railways—some of them even ruder than the remarks they used to make about the Southern Railway—and they must not expect everything to change overnight, but he had every confidence that after vesting date the gas industry would continue to render a no less satisfactory service than in the past.

Mr. **Henry F. H. Jones,** Chairman of the East Midlands Gas Board, also replied. In acknowledging the warm welcome he had received, he said this was not the first time he had enjoyed the hospitality of the Eastern Association. He was not, in fact, chairman of anything yet, because the Area Board had not been appointed. Those who were to be entrusted with the administration of the gas industry in the future were not supermen, but he was sure they would all do their best. No Area Board would succeed unless it had the loyalty and co-operation of those people who worked for it, and he was absolutely convinced from what had already been said that that support would be forthcoming. Speaking not as an Area Board Chairman-designate but as Henry Jones, he could say one thing about the future. In his opinion it was essential to put as much responsibility as possible on the man who did the job in the town or city. Obviously with an Area Board it was not possible to have a large number of people all doing something different according to their own ideas. Policy had to be laid down and carried out, but within a co-ordinated policy he felt the ideal system was one in which the individual who was doing the job was free to exercise his initiative and judgment and common-sense.

INTEGRATION THROUGH GROUPING

DISCUSSION ON MR. ALEXANDER McDONALD'S PAPER

FOLLOWING is our report of the discussion on the paper on "Integration Through Grouping," which Mr. Alexander McDonald, General Manager of the York, Harrogate, and District Group of Gas Companies, presented to the Autumn Meeting of the Manchester District Association of Gas Engineers at Harrogate on Oct. 29. The paper was published in the "JOURNAL" of Nov. 10 (pp. 335-344), the discussion being unavoidably held over to make room for the announcement concerning the appointment of the Chairmen of the Area Gas Boards.

The **President** (Mr. James MacLusky, Halifax) said that the Council had enabled members to hear a paper which was topical in view of the advent of Area Boards, when certain engineers would undoubtedly be faced with the problems of integration through grouping. The paper was crammed full of facts, figures, and information which would be of value to gas engineers in all areas. With the initiative, energy, and imagination of Colonel W. M. Carr there had come a system of integrated grouping and decentralization which was essential to the industry. The paper was largely a history of the group, its achievements, and future policy. It was an inspiration though there might be difficulties in attempting to discuss it because it was concerned with a particular area.

Colonel **W. M. Carr** (Chairman, United Kingdom Gas Corporation) said that Mr. McDonald had given a very accurate and concise description of the set-up of the York-Harrogate group of Gas Companies. It must be realized that the set-up was to some extent dictated by the conditions and although the group was operating as a group each undertaking within it was a separate statutory undertaking and had to produce the accounts of a statutory undertaking to be submitted in the same way as all other accounts to the Ministry. Therefore, in every respect, as Mr. McDonald had indicated, separate minutes had to be kept, but that had not proved altogether a disadvantage. It had enabled them, first of all, to ensure a proper allocation of costs to the different undertakings. It had greatly assisted in balanced control —which was the only sort of control that was worth-while, being based on information. By control he meant that it had enabled Mr. McDonald and others working with him to see where they were going all the way. When everything was boiled down, costs were really the first thing that mattered and it did not matter if they were under nationalization or not. By maintaining decentralization, it was possible for each unit or part of a unit to be properly controlled on the basis of what it was costing. He hoped that all in the industry would never lose sight of the importance of cost. A consideration of every scheme must be: "What is it going to cost and is it economic to do it?" If they lost sight of the cost, they would not fulfil their obligations to the consumer which was the first duty of everyone working in the gas industry. He had appreciated the paper, particularly as it had been given at the present time.

Fundamental Principles

Mr. **J. D. Ashworth** (Blackburn) said that Mr. McDonald should be congratulated on such a valuable and instructive paper. He had set out in detail some very interesting facts on the grouping of a number of undertakings and the advantages to be gained, not only from the undertaking's point of view, but also the consumer's. In the opening stages of the paper he had given three fundamental principles to justify the formation of any group, the important one being that referring to the improvement of a satisfactory service to the consumer. This appeared to be the basis of the reasons for grouping, as he explained in the paper the ways and means by which this might be achieved. On the subject of distribution, the author had described the policy adopted of regular gas pressure surveys on every district. This was very important and necessary to detect load fluctuations, and to maintain pressures at peak periods. It was a policy which was often neglected until consumers complained of the lack of pressure. The author had described the importance of stock control and there was no doubt a great saving in the purchase of materials under central control. With care unnecessary stocks could be avoided, which was especially important in these days of high costs. Group activities, whereby each section of the group had its own job of work to do, avoided overlapping. More highly qualified staff were employed to carry out the work, which had been described in great detail. Every consumer in consequence had the best possible advice and service with no additional cost. Publicity, home service, and film displays of a very high standing were available in any part of the group. This could only be achieved by common pooling, again with great benefit and interest to the consumer, as was shown in the growth of attendances at demonstrations and displays. In the author's concluding remarks he had fully justified the three fundamental principles of grouping. The paper was outstanding and had given many members food for thought.

Mr. **N. G. Appleyard** (Leeds) congratulated Mr. McDonald on his paper. It was a chronicle of planning and achievement, the results of which justified a pride which must be felt by the author as the chief architect of the scheme. In view of the advent of nationalization, a few papers of this calibre would be very useful to those chosen to occupy the key posts, and would provide material on which to build the new set-up. Organizing ability and foresight were clearly apparent from the general survey of the York-Harrogate and District Group of Gas Companies. Mr. McDonald had mentioned that consumption per mile of main had increased by 25% and the overall consumption by 33%, together with other inspiring data which all went to prove how healthy was the present state of the industry, and augured well for the future. There was one important factor on which they must all agree and that was that a chief officer must have the loyalty and co-operation of his chief subordinates, and they on their part must be a team, if a scheme was to prosper. Here in a marked degree entered the influence of the personality and organizing ability of the chief. It was this factor which was all-important in any integration scheme.

District Pressures

Mr. **G. E. Currier** (Bradford) said that Mr. McDonald had chosen an opportune time for the presentation of his paper. He had been interested to read of the method of ascertaining district pressures in the various areas twice a year. Each area was divided into districts of approximately 2,000 consumers, and district pressure recorders were fixed at 12 points in each area so as to get continuous readings at each point on Saturdays. While this method would provide very useful information, he thought that adopted in Bradford was preferable, in that it provided for the fixing of 15 permanent pressure recorders (in the near future this number would be increased to 24) at key points throughout the area of supply, covering approximately 80,000 consumers. These recorders provided a continuous record throughout the year of all the pressures during every day and night at these special points. It had been found that this method facilitated the solving of local distribution troubles and was well worth the cost.

The account of gasholder storage at Harrogate had been interesting, but while not being critical of it he wished to urge that gas engineers should revise their ideas as to what was necessary as regards gasholder storage. It had always been recognized that the gasholder was one of the greatest assets of the industry in meeting peak demands, and was one of the things that electricians would most like to have to meet their peak loads. In pre-war days it was always considered desirable to have sufficient storage to cover 24 hours' maximum day's demand. As a result of bombing during the war and because of the difficulty of getting new holders installed after the war, many undertakings had found that it was possible to work with much less than 24 hours' storage without loss of efficiency. It had to be remembered that gasholders were very costly, and with prices ruling to-day, it was more than ever necessary to design the plant so that holder storage was sufficient, but not more than sufficient, to allow for efficient operation. The amount of storage capacity was, of course, governed by the existence and capacity of carburetted water gas plant. Fortunately many engineers in more recent years had been converted to the C.W.G. system of production. It was generally recognized that each undertaking now has to strike a balance between the storage carried at the manufacturing station and that carried in the out-districts.

The Mainlaying Squad

Information given by the author on the mainlaying squad was worthy of note, as were the mainlaying costs. It was observed that a squad had been built up for special jobs in the area of the Company, and one would like to ask if this squad was a complete one, including mainlayers, joiners, &c., and also whether the work carried out by this squad justified the purchase of some of the more expensive equipment, such as compressors, mobile cranes, and mechanical shovels. He would like to ask what arrangements had been made for dealing with emergencies in the area of each Company in the Group. Those were: (a) Gas escapes on the district or in consumers' premises; (b) faulty appliances which necessarily have to be kept in operation.

He had expected to see some reference by the author to the training methods adopted for both staff and employees in his Group. One of the advantages of grouping was that it enabled training schemes to be put into operation, which previously, perhaps, were beyond the scope of individual undertakings. During

the last decade it had become increasingly more difficult to obtain certain classes of technicians. These difficulties were experienced early on by the Bradford Gas Department, and as a result, the training of youths straight from school, either Elementary, Secondary, or Grammar Schools, had proceeded for a number of years now. In the case of craftsmen, boys were given employment and trained, serving an apprenticeship in these crafts: works mechanics, electricians, joiners, welders, gas-fitters, meter repairers, sheet metal workers, retort setters, and transport engineers. In the case of the staff, the following technicians were given the necessary training: chemists, distribution engineers, shift engineers, and sales and service representatives. The trainees were required, in all cases, to attend evening classes for recognized courses of study over a period of years, and were given all the necessary facilities and encouragement to become fully qualified in their particular field. These schemes of training had handsomely repaid the undertaking in providing sufficient and trained staff not only for Bradford but elsewhere.

The author had explained and described many of the important advantages to be obtained as a result of grouping. There were two types of integration: (i) Physical integration, which might allow the closing down of certain production manufacturing stations; (ii) integration of management and control, where there was the type of grouping described by the author, but with no physical link-up. Among the many advantages to be derived from the latter type and described in the paper were: Accountancy, transport, painting, mainlaying, mechanics' workshop, industrial and domestic development, repairs of meters and appliances, film shows, window displays, publicity, and the training of staff and employees. It had been most refreshing to hear how the author had proved that, not only had it paid them to have their own mechanics' workshop for the fabrication of works plant, &c., mainlaying and painting squads, and centralized transport, but that time had also been saved by the work being carried out by the Company's employees. This was in rather sharp, though pleasant, contrast, to some of the experiences one had read of elsewhere. The chief executive had to beware of the superenthusiast who as a matter of pride wished to carry out or fabricate everything himself. There was no doubt that in a few cases the calling in and use of outside specialists could be justified for certain special work. In the great majority of cases, however, in the gas industry, the work could be done more efficiently, more quickly, and at less cost, by the undertaking itself, providing it or the group of undertakings is relatively large.

From the paper, it was evident that the grouping of these undertakings had enabled the pooling of labour (including specialists) and material resources of the individual companies to the advantage and benefit of all the gas consumers. The results obtained fully justified the policy of the York-Harrogate and District Group of Gas Companies.

Early Steps Towards Integration

Mr. **F. H. Robinson** (formerly of Bishop's Stortford) congratulated Mr. McDonald on his paper and remarked that it described the ultimate development of gas supply in the Harrogate area which had actually started in 1910, when the Harrogate Gas Company took over a small private undertaking of the Nidd Valley (Birswith—five miles from the works). In 1926 the Pately Bridge Company, 15 miles away, had been taken over, and in 1928 Knaresborough, Boroughbridge, Wetherby, Boston Spa, Tadcaster, and Spofforth were taken over, other areas being added later. Many villages were in this way given a gas supply for the first time. In 1943 had come the final development with the grouping of adjoining undertakings under the United Kingdom Gas Corporation.

The organization which the author had described was similar to that of the Northmet Power Company, which supplied electricity to a large area of Middlesex, Hertfordshire, and Essex, and part of the London Underground. The gas undertaking which he had served for 12½ years before his retirement, Bishop's Stortford, Epping, and District Gas Company, was a subsidiary of the Northmet Power Company. Its area covered over 300 sq. miles in Hertfordshire and Essex, of a rural character, and had many points in common with the York-Harrogate area. After 1931 when the Northmet Company obtained a controlling interest in the undertaking, the advantages of being part of a larger and well-organized concern were soon realized in much the same way as described in the paper. Financial help, drawing office assistance, modern office systems, legal advice, and many other benefits were at the disposal of the smaller undertaking, which were not then in a position to carry out the necessary developments. As a result their two works were reconstructed and the manufacturing capacity enlarged to meet increasing consumption, new offices and showrooms were built, and mains extended.

The whole area was split up into districts, each in the charge of a resident engineer who was technically trained. These districts were grouped into a few areas under the supervision of an area superintendent, details being dealt with by the resident engineers. The general manager visited each district once a month to keep personal contact with the man on the spot. Any matter of special importance dealt with were confirmed in writing within two or three days. Resident engineers and area superintendents attended a monthly meeting at head office with the general manager and departmental heads for a general discussion and exchange of ideas so that each knew what was going on in the whole area. Minutes were kept and circulated. One rule was that the head office should be kept informed as to what was going on in the districts.

The scheme of organization shown in Fig. 2 of the paper might of course need modification in certain areas to suit local requirements, but he had found that it worked well if a team spirit existed and the right man was at the top.

Before the Harrogate area was extended the average consumption per consumer was nearly 40,000 cu.ft. with 560/580 C.V. gas. The lower average consumption of villages with no industry reduced this figure and when Birstwith was taken over the average was 12,000 cu.ft. When Pately Bridge came into the scheme the average was 8,000 cu.ft., rural villages having a small average consumption per consumer.

The particulars given in the paper showed that the scheme of amalgamation and grouping in the York-Harrogate area had been fully justified, but it would only continue to thrive if the team spirit permeated the whole from top to bottom.

Individual Identities

Mr. **N. Hudson** (Mirfield) said he welcomed the opportunity of publicly thanking Mr. McDonald for his historical and factual survey of the integration of six individual undertakings by arranging for their planning and function to be controlled as a group as distinct from amalgamation. It was obvious that such an arrangement must have presented complex problems of administration, particularly when existing statutory requirements made necessary the preservation of the individual identities of the members of the group, a need which would automatically be removed if amalgamation had taken place. The fact that in five years a smoothly working organization had been designed, fabricated, and put to work demanded congratulations, particularly when one remembered that for the first half of the period they were at war, and for the second half were valiantly trying to win the peace that followed.

When the author listed the three fundamental principles—which he might rename objectives—which justified the group, he wondered whether the author held that there was no case for integration, whether by grouping or any other plan, unless the preliminary work indicated that the integration would achieve, in some degree, those objectives. He was prompted to ask this because it had always appeared to him a fallacy to assume that integration as a "mode" was to be automatically commended. He believed it could actually be harmful unless the preliminary investigations had indicated that its application would achieve the objectives in mind. It was interesting to note that Mr. McDonald, from his wide experience in these matters, did state that the welding together of the various units, as far as the basic functions of manufacture and supply were concerned, was of a secondary nature and that the process must be gradual. He thought the author was here indicating an overriding principle in integration, namely, that there was a correct way to tackle this problem and the wise and orderly approach was:

(1) Thorough preliminary investigation.
(2) Assessment of administrative requirements.
(3) Construction of an administrative organization.
(4) Gradual application of the plan as time and circumstance warranted it.

As would be expected from the title of the paper the main subject matter was a report on the design and working of such an administrative organization and the progress that had so far been achieved in the planned integration. He was particularly interested in the way in which the individual Boards of Directors were maintained and, at the same time, planned into the integrated group. The decision to delegate authority and responsibility downwards had no doubt contributed in no small measure to the success of the organization described, since as the author stated such a system gave encouragement and prestige to the officials in junior positions and developed individual initiative and keenness.

Of the divisional activities and reports one could say little save to accept them and file them for useful reference, but he would like to comment on the details set out in the Appendices. In Tables 3 and 4, figures of the average price received per therm and capital employed per million cu.ft. made were given and these certainly justified the integration carried through. Should we not, however, be a little careful in our interpretation of these figures and for this reason? The period of integration described coincided with a period of expanding sales which were not wholly due to improved consumer service in the widest sense. Much of it was due to both the scarcity and high prices of alternative fuels and, in addition, such expansion of sales enabled many undertakings to absorb increased costs by spreading overhead charges. At Mirfield, where there had been no grouping, the average price received per therm had only risen from 8.9d. per therm in 1943 to 10.1d. in 1947. This had only been possible because of increased sales. These very facts, however, indicated that if

integration by grouping could, by better service, promote gas sales, then it would as a consequence enable commodity prices to be reduced.

The paper was a blue-print of a scheme the author had, with his colleagues, assessed, designed, and put to work and he could easily believe that he and his staff had found it one of absorbing interest. He thanked Mr. McDonald sincerely for making available to the members the records.

The Author's Reply

Replying, Mr. **McDonald** thanked the members for the reception they had given to his paper. When he started to prepare it his greatest difficulty was to know what to cut out. He had a mass of information and could only select a small part of it. He felt that it was rather disjointed and did not fulfill all the functions he hoped it would.

Several speakers had referred to the question of teamwork in the group, and he must emphasize that any results achieved were not the work of any one individual but of a complete team. Not only the officials, but also the directors, because he had found that their help was invaluable in preparing any schemes on hand. Col. Carr had referred to the benefits obtained from keeping separate statistics of the different undertakings. He must emphasize that point: it was very easy to mass all one's details into a consolidated statement and say that one was getting a certain result. Having been forced to keep separate statistics they could tie down where the deficiencies were. If unaccounted-for gas was 5% in one area and 10% in another, the average figure might be 5.2%, but in that way they would not know what results they were obtaining in the different places. It was quite possible for York figures to completely overshadow those of other undertakings. Mr. Hudson had said that there was one important point which he had been unable to include. It was not always advisable to apply integration, for it required very careful investigation in the first place. Before it was decided to go ahead in any of the groupings he had been associated with, extensive investigations were carried out in all branches. It was not an easy job to decide whether integration should be put through in all cases or not. There were two separate sides to integration: the grouping where there was no physical link, and the question of centralized manufacture or to introduce coke oven gas. These questions must be very carefully investigated.

In view of the short time available, Mr. McDonald stated that he would answer the discussion more fully in writing.

Proposing a vote of thanks to Mr. McDonald, Mr. **A. L. Higham** (Hull) said that in his own experience he had noted great benefits when link-ups were completed. Mr. **J. H. Clegg** (Oswaldtwistle) seconded the motion.

CORNISH GAS ASSOCIATION

On Oct. 20 the Cornish Gas Association visited Murdoch House, Redruth, on which occasion a lecture was given by Mr. F. L. Harris, M.A., J.P., on the life of William Murdoch. Murdoch lived in the house where the meeting was held, which house was lighted by gas made on the premises in 1792. The house itself is at present used as a centre for W.E.A. meetings and other educational organizations of Redruth and district. It probably stands on at least part of the site of the medieval chapel of St. Rumon (licenced 1400). Murdoch made and tested his locomotive in Redruth in 1784.

The house was endowed in 1930 by Mr. Pearse Jenkin, a local Quaker, in the sum of £50 per annum for a period of 10 years. This fund is now exhausted, and an appeal will shortly be made by the Association to the gas industry for a capital sum of £1,500 to £2,000, which, if invested, would yield sufficient interest to maintain the fabric and keep the house in good condition for all time.

YORKSHIRE DISTRICT TAR BOARD

The Annual Meeting of the Yorkshire District Tar Board of the British Road Tar Association was held recently at the Great Northern Hotel, Leeds, when the following officers were elected for the ensuing year:

Chairman: E. Hardman; *Vice-Chairman*: H. E. Bloor; *Executive Committee*: H. E. Bloor, J. E. Lister Cooper, G. E. Currier, A. L. Higham, T. Hornby, A. MacDonald, A. L. Jennings, C. S. Shapley, H. Singleton, H. B. J. Hart, R. Halkett, D. T. Livesey, and H. Jack representing gas tar producers, G. F. Peirson, G. A. Hebden (alternate Mr. C. M. Frith) and F. W. O. Doddrell representing coke oven tar producers, E. Hardman, F. W. Bedford, A. Slater, S. Billbrough, H. E. Sugden, and H. Longden representing tar distillers; *Hon. Secretary*: H. Longden; *Representative on Managing Council*: H. E. Bloor.

Mr. J. Davidson Pratt, Chairman of the B.R.T.A., informed the meeting that the quantity of crude tar produced in this country had been in the region of 2 mill. tons per annum, but it was estimated that this would be increased during the current year by 300,000 tons. Variation in the types of crude tar made the preparation of road tar to a standard specification difficult and the work of the B.R.T.A. more difficult. The B.R.T.A. was carrying out continuous scientific study of the problems involved in collaboration with the Department of Scientific and Industrial Research.

Mr. W. E. Cone, Technical Adviser, said road development in this country at the moment was dominated by the need for economy. It was unlikely that the Government's 10-year road plan would be given effect to for a few years, and the curtailment of expenditure had underlined the need for wise spending on maintenance work. Surveyors were also looking for cheaper forms of road construction, and this had led to trials of the hot tar "re-tread" process of re-surfacing roads being carried out in different parts of the country. The film "Surface Dressing with Tar," together with instructional slides, had been of great value in bringing about an improvement in surfacing dressing work, and the film had been favourably received in all quarters.

Hastings Hotels and Catering Exhibition, the first to be held since the war, was an outstanding success. The exhibition was held in the Pier Pavilion, where, as reported in the "JOURNAL" earlier in the year, a very effective gas heating system has been installed. The Hastings and St. Leonards Gas Company made an imposing display of large scale gas cooking equipment.

GOVERNMENT "STREAMLINES" CONTROLS

Hoping that industries will, without a licensing system, comply with Government policy in allocating their production between home and export markets, the President of the Board of Trade, Mr. Harold Wilson, and the Minister of Supply, Mr. G. R. Strauss, have announced the relaxing of controls covering 60 commodities in one case and over 75 in the other. Machinery of all kinds, chemicals, industrial water heaters, paint materials, timber, fertilizers, and many other products are affected.

In a written answer to a question in the House of Commons on Nov. 4, Mr. Strauss stated that he had approved the release from control of most of the products controlled by the Machinery, Plant, and Appliances (General) Orders, 1945-46, the revocation coming into force on Dec. 1. The Wireless Receivers and Radiogramophones (No. 1) Order, 1947, would also be revoked. The Machinery, Plant, and Appliances Orders (631/1945) require a licence to be obtained for the supply of machinery, plant, and appliances grouped under the headings of "Controlled goods," but since it is impracticable to manufacture the goods unless they can be disposed of, the order is in effect a control on manufacture also. Under the heading of miscellaneous machinery and appliances which can now be supplied without a licence are included the following: packing machinery, filtration plant, machinery for working plastics, drying machinery, steam generating plant, mining and quarrying plant, machinery for making briquetted fuels, paint making machinery, water distillation plant, centrifugal separating machinery, weighing apparatus, electrical machinery and plant, furnaces, conveyors and elevators, foundry plant, industrial trucks, and water heating apparatus. Six products remain under control, including refrigerators, domestic, commercial, and industrial. Licenses will still be required to supply these products, Mr. Strauss explained at a Press conference, because the Ministry of Supply could not be quite sure that the figure required for export would rise to that required.

Mr. Harold Wilson, in a Parliamentary reply, said that he had authorized the relaxation of controls affecting more than 60 commodities for which the Board of Trade is responsible. These relaxations are of three main kinds. The first kind is where, as a result of plans made some time back, supplies of industrial materials manufactured in this country (particularly of some chemicals) have increased to the point where there is enough to meet demand; the second type are the controls over manufacture of miscellaneous consumer goods; and the third change is that for some specialized raw materials where supply and currency conditions allow it, it is proposed to revert from public to private purchase.

The net effect of these changes, said Mr. Wilson, would be to get rid of 200,000 licences a year issued by his Department, and about 600,000 licenses altogether, including those issued locally. The main effect would be to relieve works staffs of paper work and allow them more time to get on with production jobs. It would, too, enable go-ahead firms previously tied down to quotas based on pre-war production to forge ahead without hindrance.

The changes are the result of the work of Mr. G. R. B. Merriam, appointed Examiner of Controls to the Board of Trade last February, and Sir Frederick Bovenschen, appointed early this year to report on controls to the Minister of Supply. The whole of the control systems of the two Departments are being considered by these examiners, it was stated, and Sir Frederick has also reviewed the Electrical Goods Order under which domestic electrical appliances are controlled. The Minister of Supply has approved the issue of open licenses for all these products except space and water heaters which were excepted at the request of the Ministry of Fuel and Power. These open licences have already been issued but though control has been relaxed by administrative action, the Statutory Order has been retained.

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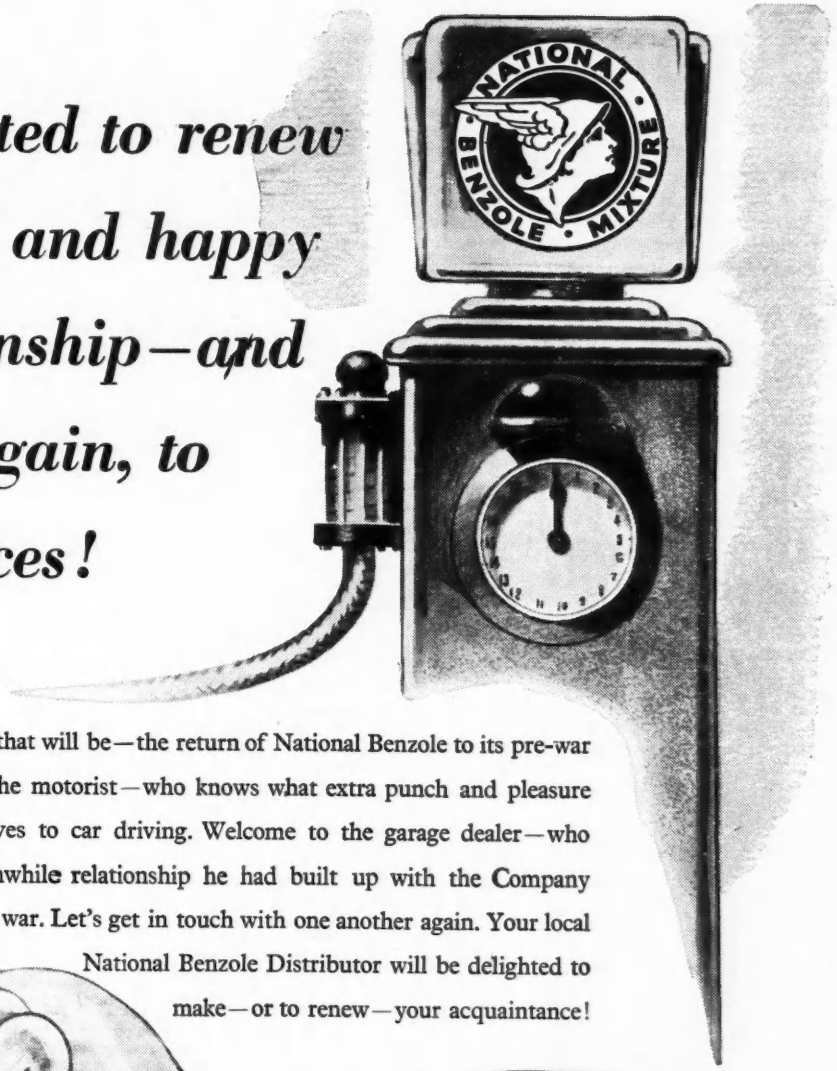

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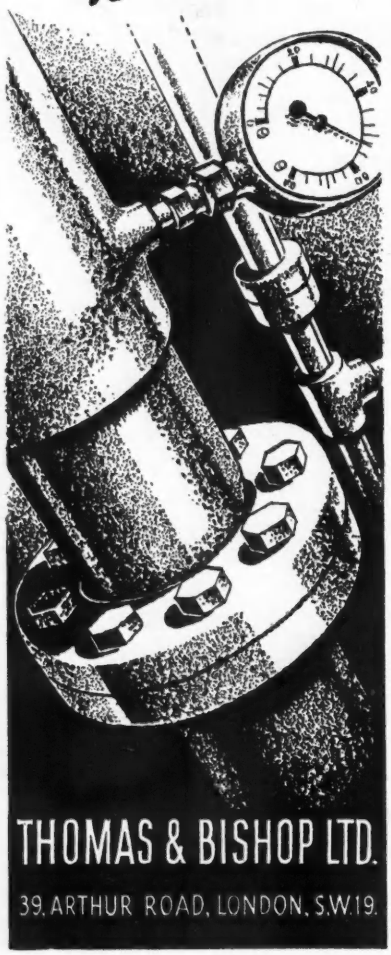

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GAS UNDERTAKINGS' RESULTS

Dundee Gas Department

In his first annual report as Engineer and Manager, Mr. W. S. Johnston states that the make of gas declined by approximately 46 mill. cu.ft., but the quantity accounted for was barely 6½ mill. cu.ft. down, due to a reduction of roughly 39½ mill. cu.ft. in gas unaccounted for. Income from gas sales was £444,702, an increase of £34,346 over the previous year. Some leeway was made up in the exchange and replacement of meters, cookers, and fires, which had been retarded during the war years. Sales of gas appliances brought in £34,630 and showed a profit of £4,782. There are still waiting lists for sale and free-on-loan appliances. The balance carried to net revenue account was £95,163, compared with £52,937 for the previous year. Negotiations were completed during the year for the supply of gas in bulk to the Monifieth Town Council to the extent of about 35 mill. cu.ft. per annum.

Walsall Gas Department

The report for the year ended Mar. 31 records that the quantity of gas sold and accounted for was 1,175,854,000 cu.ft., an increase of 6.12% on the total for the previous year and 88.9% more than in the year ended Mar. 31, 1940. This increase was achieved without any addition to gas production plant as it existed in 1939. Income from gas sales was £238,897, an increase of £13,298 on the previous year and £131,177 more than in 1940. The average price realized for all gas was 10.84d. per therm against 10.85d. in the previous year. Carburetted water gas production amounted to 17.86% of the total make, production at approximately 229 mill. cu.ft. being very near to that of last year. The Ministry of Fuel and Power terminated the gas oil subsidy as from Nov. 1 last year, representing a loss of £15,000 per year to the revenue account. The price of gas oil was increased by 2½d. per gall., representing an additional expenditure of £4,700 in a full year. Coal carbonized totalled 62,837 tons, an increase of 1,803 tons on the year. The average price was 3s. 6.32d. higher, the increased cost of coal raising the Department's coal bill by £11,080. Income from gas appliance sales was £45,506, or £9,989 more than in the previous year. Gross profit was £38,661 and net profit was £11,893, against £20,205 for the previous year. For several years the Gas Committee's policy has been to reduce profit on turnover. In 1942 the gross profit on turnover was 29.8%, and the figure has been progressively reduced to 9.9% for the past year. The coke market position changed completely. Gas-works in many parts of the country had serious difficulties with increasing stocks of coke, and in the Midlands district alone upwards of 30,000 tons was in stock at the end of the year. Walsall Gas Department was able to dispose of all its available coke and was in this respect in a better position than any other in the Midland district. The report concludes: "Taking all the relevant matters into consideration the year's trading results may well be the best in the history of the undertaking."

Cooling Units

The Visco Engineering Company, Ltd., Stafford Road, Croydon, has published an illustrated list which describes steel shell cooling units for small and medium quantities of water and contains photographs of a number of recent installations of both forced draught and induced draught coolers. These units are suitable for export as they are easy to pack and simple to erect. During the war many hundreds were supplied to Service departments for use in different parts of the world.

GAS STOCKS AND SHARES

Transactions on the London Stock Exchange last week were more numerous than for some weeks, and the average prices of British Funds and industrial shares both showed a slight increase. Markets opened promisingly on Monday, the day's 8,898 markings being the highest since early June. The Lord Mayor's Show on Tuesday proved a temporary counter-attraction to business, and the opposition to the Steel Nationalization Bill, together with the latest threats from Berlin, was a disturbing influence. On the other hand the unexpectedly good trade returns for October were encouraging.

There was a considerable increase in the number of transactions in gas shares, the week's total of 274 being the highest since the first week in July. Prices, however, remained practically unaltered. Ex-dividend quotations for Associated Gas and Water Undertakings' Ordinary and Deferred both showed a slight drop of 3d. Cape Town, also ex-dividend, were 1s. lower on the week. Imperial Continental were one point higher at 114½.

The week's rises and falls were:

OFFICIAL LIST

Associated Gas & Water, ord. (xd. Nov. 3)	22/ — 23/	—	3d.
Do. deferred (xd. Nov. 3)	22/6 — 23/6	—	3d.
Cape Town, 4½ p.c. cum. pref. (xd. Nov. 3)	17/ — 19/	—	1s.
Imperial Continental	112 —117	+	1

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